

**Peer Review Plan:** Species Status Assessment Report for the Colorado Pikeminnow  
(*Ptychocheilus lucius*)

**Timeline of the Peer review (estimated):**

**Draft documents to be disseminated:** November 2019

**Peer review to be initiated:** November 2019

**Peer review to be completed by:** December 2019

**Determination regarding species' status expected:** This report will inform a 5-year Status Review under the Endangered Species Act. This review is expected to be completed in FY2020.

**About the Peer Review Process:**

In accordance with our July 1, 1994, peer review policy (59 FR 34270), the Service's August 22, 2016, Director's Memo on the Peer Review Process, and the Office of Management and Budget's December 16, 2004, Final Information Quality Bulletin for Peer Review, we will solicit independent scientific reviews of the information contained in our Species Status Assessment Report for the Colorado pikeminnow.

The U.S. Fish and Wildlife Service (Service) will request peer review from three or more independent experts. We will consider the following criteria.

- **Expertise:** The reviewer should have knowledge of or experience with Colorado pikeminnow or similar species biology.
- **Independence:** The reviewer should not be employed by the Service. Academic, consulting or government scientists should have sufficient independence from the Service if the government supports their work.
- **Objectivity:** The reviewer should be recognized by his or her peers as being objective, open-minded, and thoughtful. In addition, the reviewer should be comfortable sharing his or her knowledge and perspectives and openly identifying his or her knowledge gaps.
- **Conflict of Interest:** The reviewer should not have any financial or other interest that conflicts or that could impair his or her objectivity or create an unfair competitive advantage. If an otherwise qualified reviewer has an unavoidable conflict of interest, the Service may publicly disclose the conflict.

While expertise is the primary consideration, the Service will select peer reviewers (considering, but not limited to, these selections) that add to a diversity of scientific perspectives relevant to the Species Status Assessment Report for the Colorado pikeminnow. We will not be providing financial compensation to peer reviewers. We will solicit reviews from at least three qualified experts.

The Service will provide each peer reviewer with information explaining their role and instructions for fulfilling that role, the Species Status Assessment Report, and a list of citations

as necessary. The purpose of seeking independent peer review is to ensure use of the best scientific and commercial information available and to ensure and to maximize the quality, objectivity, utility, and integrity of the information upon which the report is based, as well as to ensure that reviews by recognized experts are incorporated into the Species Status Assessment process. Peer reviewers will be advised that they are not to provide advice on policy. Rather, they should focus their review on identifying and characterizing scientific uncertainties. Peer reviewers will be asked to answer questions pertaining to the logic of our assumptions, arguments, and conclusions and to provide any other relevant comments, criticisms, or thoughts. Specific questions put to the reviewers include the following:

1. Is our description and analysis of the species' needs, biology, habitat, population trends, and historic and current distribution of the species accurate?
2. Does the Species Status Assessment Report provide accurate and adequate review and analysis of the current and projected future condition of the species?
3. Are our assumptions and definitions of suitable habitat logical and adequate?
4. Are there any significant oversights, omissions, or inconsistencies in our Species Status Assessment Report?
5. Are the conclusions we reach logical and supported by the evidence we provide?
6. Did we include all the necessary and pertinent literature to support our assumptions/arguments/conclusions?

Peer reviewers will provide individual, written responses to the Service. Peer reviewers will be advised that their reviews, including their names and affiliations, will: (1) be included in the decisional record of our determinations regarding this species' status (i.e., final rules or withdrawals); and, (2) be available to the public upon request once all reviews are completed. We will summarize and respond to the issues raised by the peer reviewers in the record supporting our determinations. A decision on the 5-year Status Review, which evaluates the Colorado pikeminnow's listing status under the ESA (currently listed as endangered), is expected in Fiscal Year 2020.

### **About Public Participation**

The peer review process will be initiated shortly. We strongly encourage that public comments on the approach of this peer review be submitted by November 1, 2019, in order to allow enough time for processing and consideration. However, we will accept comments on the peer review plan throughout the Species Status Assessment process. This Species Status Assessment report will inform the Service's decision on the 5-year Status Review for the Colorado pikeminnow under the Endangered Species Act in Fiscal Year 2020.

### **Contact**

For more information, contact Justin Shoemaker, at 309-757-5800 x214.

15 December 2019

RE: Review of Colorado Pikeminnow SSA

Thank you for the opportunity to review this Species Status Assessment for the Colorado Pikeminnow. This is a very detailed and lengthy report with a great deal of information of data relevant to the conservation of this species. The authors should be commended on the effort it took to compile this information. Although I have provided some comments below, please note that because of time constraints, it was not possible to provide a thorough review of this 161 page document. Rather, my review focused on aspects that I felt qualified to comment on. Below I provide brief answers to the questions you sent and below that I've provided some comments referenced by line numbers. I hope this information will help as you finalize this report.

1. Is our description and analysis of the species' needs, biology, habitat, population trends, and historic and current distribution of the species accurate?

As mentioned above, there is an incredible amount of information in this report. From what I can tell, it appears to be accurate.

2. Does the Species Status Assessment Report provide accurate and adequate review and analysis of the current and projected future condition of the species?

This seems to be accurate and adequate. However, a major concern with this report is the lack of synthesis. There is way too much information on this species for most scientists to wade through. Most of that information could just be referenced without a need to provide details from every study. I propose this document would be much more useful if it were about 70% shorter with a more synthetic approach.

3. Are our assumptions and definitions of suitable habitat logical and adequate?

Yes, but as mentioned above, there is so much information here, it is really hard to work through all the details.

4. Are there any significant oversights, omissions, or inconsistencies in our Species Status Assessment Report?

See line-by-line comments below.

5. Are the conclusions we reach logical and supported by the evidence we provide?

Same comment as above. I believe so, but this information could be presented more efficiently.

6. Did we include all the necessary and pertinent literature to support our assumptions/arguments/conclusions?

I did not notice much missing literature. A more concise summary of the literature might be a better way to support assumptions/arguments/conclusions.

Line-by-line comments:

L932 - It wasn't clear if this documents assumes adults are entirely piscivorous. That assumption is based on limited dietary information and it is hard to believe these fish do not consume invertebrates if available.

L1081 – The relationship between flows and backwaters is not clearly presented and leads to some uncertainty in these relationships. Specifically, I don't understand Figure 4. The legend is misleading because backwater area is not plotted on they y-axis. Figure 5 is also difficult to interpret. This would be better plotted as flow rank versus total backwater available. Maybe as an inset so you can retain the spatial information, although it is not clear why this is relevant. Figure 7 is not convincing at all. The argument that pikeminnow need backwaters is not very convincing given these data. There are a number of other habitat types that differ in high flow years.

L1241 – 1245 – These sentences are too vague to be meaningful. Suggest providing more detail on these estimates.

L1282 – Might change to “Humans actions can exacerbate *or diminish* environmental stochasticity.” Regulation of flows by dams has certainly reduced environmental stochasticity in many cases.

L1457 – Mention studies that show CPM in tributary habitats? E.g., Fresques, T. D., R. C. Ramey, and G. J. Dekleva. 2013. Use of small tributary streams by subadult Colorado Pikeminnows (*Ptychocheilus lucius*) in Yellow Jacket Canyon, Colorado. *Southwestern Naturalist* 58:104–107.

L1576 – 1583 – This section might be misleading regarding the impacts of channel catfish. It seems important to note that Tyus and Nikirk did not find any endangered species in the diet of catfish and Johnson et al., (2008), if I recall correctly, suggested catfish were not likely an important predatory threat relative to smallmouth bass. Without an understanding of food availability, it is difficult to know if catfish are competing for resources with pikeminnow.

L1827 – 1838 – Confusing to switch between °F and °C. Stick with °C.

2671 – Franssen et al. did not examine diet, rather they used stable isotopes.

2674 – Clarify Colorado data is from Vanicek and Kramer.

2767 – I'm not sure lambda is a good index for stream and river fish. How is this different/better than a simple analysis of population trends in abundance? Populations are likely to fluctuate over time. Some years they will decline and some they will increase. A stable population should average a lambda of 1. So, if lambda is  $> 1$ , I'm not sure what that means. It is also important to evaluate the confidence in those estimates of lambda.

2865 – 2874 – Isn't this paragraph redundant with above statements?

2876 – Again, not clear why lambda is needed here. Simply the trends that are important. This is a good example where a more synthetic approach to this report would help.

If you have any questions, please do not hesitate to e-mail ([kgido@ksu.edu](mailto:kgido@ksu.edu)).

Sincerely,



Keith Gido  
University Distinguished Professor

## **Species Status Assessment Report for the Colorado Pikeminnow**

**Peer Review by Wayne Hubert, November 29, 2019**

This review is structured using the six question put to the reviewers.

### **1. Is our description and analysis of the species' needs, biology, habitat, population trends, and historic and current distribution of the species accurate?**

Within the Executive Summary (line 29) of the report, it is stated that Colorado Pikeminnow are “known to make long distance migrations for spawning” and “larvae [are] carried potentially long distances by river flows.” The report does not consider fully the long distances of free-flowing, warmwater riverine habitat required by the species to complete its life cycle and the possibility the habitat needs to maintain self-sustaining populations cannot be met in the Green, Upper Colorado, or San Juan river systems where management actions are focused. Chapter 2, Section 2.3 Life-cycle, identifies that in response to large spring peak flows, Colorado Pikeminnow can make spawning migrations of hundreds of kilometers to and from spawning areas. The report also identifies that larvae emerge and drift downstream to occupy low-velocity nursery habitat where they transition to juveniles. However, the report does not emphasize that the long distance upstream migrations were likely necessary to compensate for the long downstream distances that larvae and juveniles drifted to warmwater nursery areas in the Lower Colorado River. It is stated that the Colorado Pikeminnow’s “ability to migrate long distances is likely one of the reasons this species was once found throughout warmwater reaches of the Colorado River basin,” but the need to migrate upstream in order to compensate for long distance downstream movements at early stages is not sufficiently recognized.

The impact of fragmentation of the Colorado River by construction of mainstem dams on the life cycle of Colorado Pikeminnow is implied in the report, but it is not sufficiently emphasized to identify the mainstem dams a primary stressor to sustainability of the species. Buried in Chapter 3, Section 3.1 (lines 1210-1215) is the statement “The distribution of Colorado pikeminnow throughout its range is likely a function of the extent of available riverine habitat (frequently measured as river length) and its ability to support different life stages. This is because, in general, an organism’s population abundance is positively correlated to habitat size (Gaston and Blackburn 2000) and for Colorado River basin fishes, localized extirpation risk increases as the length of occupied river decreases 1214 (Fagan *et al.* 2002).” The need for sufficient lengths of riverine habitat to facilitate the life cycle of Colorado Pikeminnow is acknowledged in the report, but that need is not emphasized among the list of stressors or addressed in a substantial way among the array of management actions.

It is stated in Section 2.4 that in the Upper Colorado River Basin the Colorado Pikeminnow was documented as being “rare to occasional.” The focus of recovery is on the Green River and a segment of the Upper Colorado River where “wild” populations have persisted. The report does not address the possibility that there may not be sufficient lengths of sufficiently warm, productive riverine habitat upstream from Lake Powell or in the San Juan River to facility the life cycle of Colorado Pikeminnow. This is a substantial uncertainty that is not addressed in the report.

Chapter 3 addresses individual and population needs of the Colorado Pikeminnow and provides substantial information, but numerous assumptions are made about species needs based on limited data. For example in Section 3.1, Individual level needs, assumptions include:

- There is evidence that larvae require 22-30 degrees C for growth and that larvae grow to “age-0 (length) within 2-3 months.” It is assumed that conditions in the three river systems of the Upper Colorado River Basin where restoration is being focused are present for sufficient numbers of age-0 Colorado Pikeminnow to reach suitable sizes with fat and protein resources to survive the following winter. The possibility that winter water temperatures and duration is a substantial limiting factor among the systems of the Upper Colorado River Basin is not addressed in the report.
- It is stated that “Low velocity areas of rivers provide important nursery habitat for Colorado Pikeminnow because they offer predator-free, food-rich environments,” and low-velocity nursery habitats include “channel margins, backwaters, and embayments (shoreline depressions similar to backwaters by facing upstream).” The report appears to assume that Colorado Pikeminnow larvae utilize the three types of habitat equally, and that each equally offers “predator-free, food-rich environments.”
- “Spring peak flows are considered the primary driver in creating backwater habitat.” The statement assumes that backwaters are more important than channel margins, embayments, or other habitat types in providing nurseries for larval Colorado Pikeminnow. It also assumes that all backwaters are equal in providing nursery habitat. The statement does not consider the magnitude or duration of discharge on a mosaic of backwaters across a riverscape or the potentially variable quality of different backwaters as habitat for larvae. Most importantly, the report assumes that the amount of backwater habitat is correlated with survival of larval Colorado Pikeminnow, but the causal mechanisms are not confirmed using empirical data.
- It is assumed that high summer flows lead to more backwaters and higher survival of larvae. However, high summer flow also leads to higher water velocities and greater volumes of water transporting larvae downstream into Lake Powell. The interactions between availability of backwater habitat, use by larval fish, and transport of larval fish out of the managed river segments are not addressed in the report.
- It is assumed that higher summer flows reduce the “frequency of lower flows that appear to establish conditions more favorable for nonnative species” particularly smallmouth bass, channel catfish, common carp and red shiner.” These four species have substantially different life cycles and habitat needs, so it should not be assumed that all nonnative species will be negatively impacted by low summer flows.

These are examples of the numbers of assumptions being made in regard to the individual level needs of Colorado Pikeminnow. Assumptions with little or no empirical evidence supporting them are abundant in Section 3.1. Similarly, there are numerous assumptions made in Section 3.2, Population level needs. These assumptions include:

- Population viability is defined as the ability of Colorado Pikeminnow to “persist” in the wild over a “biologically meaningful time frame (line 1251).” It is assumed that the abundance and age structure of a population of a species needed to “persist” over time within an array of known and unanticipated demographic and genetic perturbations can be identified and used to set targets for species recovery. It is also assumed that all possible variability in habitat required by a population can be foreseen and addressed in the estimation of abundance and age structure needs. Further, it is assumed that a “biologically meaningful time frame” can be identified. It is questionable if a

“biologically meaningful time frame” can be defined by managers for a species with a potential life span of over 50 years within an environment that has been highly altered by human activities and is rapidly changing as a result of management actions and unknown climate variability relative to conditions under which the species evolved.

- It is assumed that a resilient Colorado Pikeminnow population can be identified (line 1265) using estimates of five population parameters. The list of population parameters does not include that are likely to be important to the resilience of the species, including necessary population structure (i.e., male to female ratio, age structure of males and females, recognition of variable reproductive contribution with increasing size of females, etc.); the time frame associated with measurable population trends for a long-lived species; the fact that reproduction and age-0 survival is not consistent among years for long-lived, riverine species (that is likely why they evolved to be long-lived species); or variable survival rates among annual cohorts and among ages within a cohort.
- Many assumptions regarding population parameters that are minimally supported or not supported by empirical data for Colorado Pikeminnow are needed when modeling population dynamics.

It is recognized that recovery goals have been set for Colorado Pikeminnow in the Green River (2,600 adults), Upper Colorado River (700 adults), and San Juan River (800 adults) subbasins. It is unclear how these goals were established and why the concept of a minimum viable population was not identified among all three populations. Given the long life span of the species and variable reproductive success, it seems appropriate that a minimum viable population approach should be used that specifies the number of sexually mature females and their age structure. It is assumed that a total adult population of 700 or 800 adults (Upper Colorado River and Green River subbasins, respectively) can provide both the demographic and genetic variability needed for a sustainable population of Colorado Pikeminnow. It is uncertain if the established recovery goals are appropriate given what is currently known about the demographic and genetic needs of long-lived riverine fishes.

Species level needs are addressed (Section 3.3) using the concepts of redundancy and representation. Redundancy is determined by the number of viable populations and the spatial scale of their distribution. Representation describes the ability of a species to adapt to changing environmental conditions. The section of the report does not recognize that prior to construction of dams within the Colorado River Basin, the Colorado Pikeminnow probably evolved as a single population spread out across the basin. It is possible that some level of metapopulation differentiation occurred due to natural barriers to upstream movement, but total fragmentation of the river system with distinct populations is very unlikely to have occurred. The concepts of redundancy and representation may not be appropriate for this long-lived, highly migratory fish species that likely evolved and sustained as a single population within a contiguous river system.

## **2. Does the Species Status Assessment Report provide accurate review and analysis of the current and projected future condition of the species?**

Chapter 4 addresses the influences of eight identified stressors and mitigation actions being taken to relieve the stressors on Colorado Pikeminnow. Section 4.1 provides a largely accurate and adequate



review of the identified stressors. However, not all stressors are equal in their effects on Colorado Pikeminnow or within a specified subbasin. The section could have been substantially improved with a description of the most important stressors on Colorado Pikeminnow that are likely to be occurring in each of the subbasins in the Upper Colorado River system and the causes of the stressors in each subbasin. Substantial information is available regarding each stressor for each subbasin. It is recognized that the information in this section is used within the PVA and generalized ratings are provided by the PVA (Chapters 5 and 6 of the report), but specific information regarding each stressor documented within this species status assessment could be informative when making decisions regarding specific management actions in each subbasin.

The question needs to be asked if the list of stressors included in the report is complete and accurate. It is assumed that it is, but there are probable stressors (such as the presence or mainstem dams and reservoirs) not identified that may be hindering recovery of Colorado Pikeminnow.

Section 4.2 identifies conservation measures that have been applied to overcome stressors in each of the subbasins. Numerous successes have been achieved in improving flows and water temperatures, enhancing fish passage, preventing entrainment, reducing abundance of some nonnative fishes, and population augmentation. However, the question remains as to if any of the mitigation actions are being effective and enhancing Colorado Pikeminnow populations. Empirical evidence of biological responses of Colorado Pikeminnow populations in the three subbasins to individual or cumulative conservation actions are lacking in the report. Uncertainty regarding the efficacy of the conservation measures being applied is substantial. This was acknowledged relative to nonnative fish control efforts (line 2574): “Until the direct relationship between nonnative species removal and apparent Colorado pikeminnow survival is quantified, considerable uncertainty remains in regards to the amount of effort required to increase Colorado pikeminnow survival to rates that result in population recovery.” A similar assessment is warranted in regard to each of the conservation measures in each of the three subbasins.

Section 4.3 provides a summary of Chapter 4. The summary states: “All of the stressors discussed in this chapter are those that have and will continue to affect the future viability of Colorado pikeminnow. Two are primary drivers: the availability of water to maintain and provide suitable habitat and a high predatory burden caused by nonnative fishes 2691 (Bestgen et al. 2018; Miller 2018).” The two references supporting this summary statement identifying the two primary stressors are unpublished reports. However, the references are not readily available for review and there is no indication that they have received the scrutiny of peer review. The extent of uncertainty regarding water management and nonnative fish control is acknowledged, “A better quantitative understanding of the response of the native fish community to predator removal is needed to more effectively implement nonnative fish control that results in a significant population level response by Colorado pikeminnow. Thus, both our ability to provide adequate habitat through the use of water and control of nonnative predatory fishes produces a high level of uncertainty for the future viability of Colorado pikeminnow.” At most, the identification of the two primary stressors is an assumption and positive responses of Colorado Pikeminnow populations in each of the three subbasins to management actions to relieve these two stressors is a further assumption.

Chapter 5 describes the current conditions for Colorado Pikeminnow viability. A population viability analysis (PVA) conducted by Miller (2018) is the basis for this chapter. Miller (2018) is a report to

the Recovery Program that is not available in the peer-reviewed literature or readily available to facilitate review of this species status assessment report. From the perspective of the scientific method and a science-based review, the accuracy and reliability of information produced by the Miller (2018) report cannot be determined. Further, methods for the PVA analysis and modeling are not described within this species status assessment report. The outcome of the PVA modeling and recommendations made from it must be evaluated with this serious science-based limitation in mind. This reviewer cannot provide a science-based assessment of the PVA or the scenarios emanating from it.

Further in regard to the PVA and outcomes described in Chapters 5 and 6, the scoring systems used to summarize demographic and habitat factors (see Tables 28 and 29) appear to be subjective and does not yield quantitative insights. In the opinions of this reviewer, there is substantial uncertainty as to how the information in Chapters 5 can or should be used in making future management decisions regarding Colorado Pikeminnow recovery.

Chapter 6 is a further summary of the PVA outcome with incorporation of future scenarios. This chapter suffers from the same limitations as Chapter 5, the lack of description of methods and peer review of the methods. Tables 30-34 provide subjective scoring of various factors for the different analysis units. The various scenarios indicate what might be expected without a PVA. Scenario 3, Conservation Increase (Section 6.4) forecasts “slight” increases in with small increases in conservation efforts. No descriptions of the conservation measures to be initiated with the “slight” scenario or the small increases in population responses to be anticipated are provided in the report. Further, the report acknowledges that managers “do not currently know the numerical and functional relationships between conservation measures and Colorado Pikeminnow demographics.” In other words, “potential responses” are only assumed or hypothesized. Similarly, Scenario 4 – Considerable Conservation (Section 6.5) suggests that greater increases in conservation efforts will result in a higher response, but there is still no description of the greater conservation measures to be enacted or the resulting greater increases in population responses. In other words, the summary statement is an assumption that increases in management actions will lead to recovery of Colorado Pikeminnow in the three subbasins, but there is no empirical evidence provided that this can occur. Substantial uncertainty exists that identified and unidentified stressors can be overcome.

### **3. Are our assumptions and definitions of suitable habitat logical and adequate?**

Stressors (or factors currently limiting to the species) are identified as reductions in natural flows, water temperature depression, physical barriers to movements, loss of habitat and connectivity, entrainment, nonnative fish competition and predation, contaminants, channel simplification, and climate change. This is a logical list of stressors, but it is a major assumption that it is complete and that management actions can relieve the stressors and facilitate sustainable populations of Colorado Pikeminnow.

A major assumption is that self-sustaining populations can be established in the Green, Upper Colorado, and San Juan River systems with mitigation of the stressors. That is, development of flow and temperature “recommendations” (or targets), installation and operation of fish passages, exclusion of fish from entrainment, nonnative fish management, and population augmentation. The uncertainty is if

an array of mitigation actions in each of the three river systems, no matter how intensive, can ultimately lead to self-sustaining populations.

**4. Are there any significant oversights, omissions, or inconsistencies in our Species Status Assessment Report?**

Please see comment regarding the PVA analysis near the end of the response to Question 2.

**5. Are the conclusions we reach logical and supported by the evidence we provide?**

Scientific evidence that specific and cumulative mitigation actions within each of the river systems (i.e., Green, Upper Colorado, and San Juan) will benefit the populations and ultimately lead to self-sustaining populations is not included in the report for most of the mitigation activities. Mitigation actions include flow and water temperature “recommendations,” installation and operation of fish passages, exclusion of fish from entrainment, nonnative fish management, and population augmentation. In the Green and Upper Colorado river systems mitigation actions (excluding population augmentation) have been occurring for decades, but monitoring indicates that the abundance of adult fish has declined (Green River, Figure 44) or remained unchanged (Upper Colorado, Figure 45) since the initiation of mitigation actions. In the San Juan River all of the mitigation actions have been occurring and a population of adult fish is present as a result of population augmentation, but there is no evidence that reproduction by these fish is leading to natural recruitment into the adult population. Given trend in monitoring and assessment data associated with past management actions in the three subbasins, there is essentially no empirical evidence that either Scenario 3 - Conservation Increase (Section 6.4, line 3843) or Scenario 4 – Considerable Conservation will ultimately lead to self-sustaining populations. Consequently, there is substantial uncertainty that the identified stressors can be mitigated sufficiently by mitigation actions to lead to self-sustaining populations in any of the three systems.

**6. Did we include all necessary and pertinent literature to support our assumptions/arguments/conclusions?**

A substantial body of literature exists on Colorado Pikeminnow and much of the pertinent literature has been incorporated in some manner. However, there is a substantial body of literature (both in peer-reviewed publications and agency reports) that is not used in the report. It is recognized that a species status assessment does not require a thorough identification of all pertinent literature, but it is likely that inclusion of more recent literature could have enhanced the report.

*U.S. Fish and Wildlife Service  
Participation in Peer Review of the Status Assessment (SSA) Report  
for the  
Colorado Pikeminnow (Ptychocheilus lucius)*

**BACKGROUND INFORMATION  
AND  
CONFLICT OF INTEREST DISCLOSURE**

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This form has two (2) parts:

- Part I – Background Information, and;
- Part II – Conflict of Interest Disclosure.

Please complete both parts, **sign** and **date** the form on the last page, and **return the form** to Justin Shoemaker, U.S. Fish and Wildlife Service, 134 Union Blvd., Suite 670 Lakewood, Colorado 80228, or by email to [justin\\_shoemaker@fws.gov](mailto:justin_shoemaker@fws.gov). **Please retain a copy for your records.**

**PART I  
BACKGROUND INFORMATION**

**INSTRUCTIONS**

Please provide the information requested below regarding **relevant** organizational affiliations, government service, public statements and positions, research support, and additional information (if any). Information is “relevant” if it is related to -- and might reasonably be of interest to others concerning -- your knowledge, experience, and personal perspectives regarding the subject matter for which this form is being completed. If some or all of the requested information is contained in your curriculum vitae (CV), you may prefer to simply attach your CV to this form, supplemented by additional responses or comments below as necessary.

I. ORGANIZATIONAL AFFILIATIONS. Report your relevant business relationships (as an employee, owner, officer, director, consultant, etc.) and your relevant remunerated or volunteer non-business relationships (e.g., professional organizations, trade associations, public interest or civic groups, etc.).

See CV

II. GOVERNMENT SERVICE. Report your relevant service (full-time or part-time) with federal, state, or local government in the United States (including elected or appointed positions, employment, advisory board memberships, military service, etc.).

III. RESEARCH SUPPORT. Report relevant information regarding both public and private sources of research support (other than your present employer), including sources of funding, equipment, facilities, etc.

IV. PUBLIC STATEMENTS AND POSITIONS. List your relevant articles, testimony, speeches, etc., by date, title, and publication (if any) in which they appeared, or provide relevant representative examples if numerous. Provide a brief description of relevant positions of any organizations or groups with which you are closely identified or associated.

V. ADDITIONAL INFORMATION. If there are relevant aspects of your background or present circumstances not addressed above that might reasonably be construed by others as affecting your judgment in matters within the topics addressed in the Species Status Assessment Report, and therefore might constitute an actual or potential source of bias, please describe them briefly.

## PART II CONFLICT OF INTEREST DISCLOSURE

### INSTRUCTIONS

It is essential that a peer reviewer used by the U.S. Fish and Wildlife Service as part of its peer review of Species Status Assessments under the ESA not be compromised by conflict of interest. For this purpose, **the term “conflict of interest” means any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual’s objectivity or (2) could create an unfair competitive advantage for any person or organization.**<sup>1</sup> Except for those situations in which the Service determines that a conflict of interest is unavoidable and promptly and publicly discloses the conflict of interest, no individual can participate in a peer review process used by the Service in a Species Status Assessment if the individual has a conflict of interest that is relevant to the functions to be performed.

The term “conflict of interest” means something more than individual bias. There must be an *interest* that could be directly affected by your participation as a peer reviewer.

Conflict of interest requirements are *objective* and *prophylactic*. They are not an assessment of one’s actual behavior or character, one’s ability to act objectively despite the conflicting interest, or one’s relative insensitivity to particular dollar amounts of specific assets because of one’s personal wealth. Conflict of interest requirements are objective standards designed to eliminate certain specific, potentially compromising situations from arising, and thereby to protect the individual, the Service, and the public interest. The individual and the Service should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the information produced through the peer review simply because of the existence of conflicting interests.

The term “conflict of interest” applies only to *current interests*. It does not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behavior. Nor does it apply to possible interests that may arise in the future but do not currently exist, because such future interests are inherently speculative and uncertain. For example, a pending formal or informal application for a particular job is a current interest, but the mere possibility that one might apply for such a job in the future is not a current interest.

The term “conflict of interest” applies not only to the personal interests of the individual but also to the *interests of others* with whom the individual has substantial common financial or other interests if these interests are relevant to the functions to be performed. Thus, in assessing an individual’s potential conflicts of interest, consideration must be given not only to the interests of the individual but also to the interests of the

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<sup>1</sup> This definition and the other information in these instructions are drawn from the National Academy of Sciences Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports (May 12, 2003).



individual's spouse and minor children, the individual's employer, the individual's business partners, and others with whom the individual has substantial common financial or other interests. Consideration must also be given to the interests of those for whom one is acting in a fiduciary or similar capacity (e.g., being an officer or director of a corporation, whether profit or nonprofit, or serving as a trustee).

Such interests could include an individual's stock holdings in excess of \$10,000 in a potentially affected company or being an officer, director, or employee of the company. Serving as a consultant to the company could constitute such an interest if the consulting relationship with the company could be directly affected or is directly related to the subject matter of the regulatory process.

An individual's other possible interests might include, for example, relevant patents and other forms of intellectual property, serving as an expert witness in litigation directly related to the subject matter of the regulatory process, or receiving research funding from a party that would be directly affected by the regulatory process if the research funding could be directly affected or is directly related to the subject matter of the regulatory process and the right to independently conduct and publish the results of this research is limited by the sponsor. Consideration would also need to be given to the interests of others with whom the individual has substantial common financial interests -- particularly spouses, employers, clients, and business or research partners.

The following questions are designed to elicit information from you concerning possible conflicts of interest that are relevant to the functions to be performed by your peer review.

1. EMPLOYMENT. (a) If the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(i) If you are employed or self-employed, could your current employment or self-employment (or your spouse's current employment or self-employment) be directly affected?

(ii) To the best of your knowledge, could any financial interests of your (or your spouse's) employer or, if self-employed, your (or your spouse's) clients and/or business partners be directly affected?

(iii) If you are an officer, director or trustee of any corporation or other legal entity, could the financial interests of that corporation or legal entity be directly affected?

(iv) If you are a consultant (whether full-time or part-time), could there be a direct effect on any of your current consulting relationships?

(v) Regardless of the potential effect on the consulting relationship, do you have any current or continuing consulting relationships (including, for example, commercial and professional consulting and service arrangements, scientific and technical advisory board memberships, serving as an expert witness in litigation, or providing services in exchange for honorariums and travel expense reimbursements) that are directly related to the subject matter of the possible government regulatory action or inaction?

(b) If you are or have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal conflict of interest restrictions that may be applicable to your service in connection with this peer review?

(c) If you are a U.S. Government employee, are you currently employed by the Service?

**If the answer to all of the above questions under EMPLOYMENT is either “no” or “not applicable,” check here  (NO).**

**If the answer to any of the above questions under EMPLOYMENT is “yes,” check here  (YES), and briefly describe the circumstances on the last page of this form.**

2. INVESTMENT INTERESTS. Taking into account stocks, bonds, and other financial instruments and investments including partnerships (but excluding broadly diversified mutual funds and any investment or financial interest valued at less than \$10,000), if the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(a) Do you or your spouse or minor children own directly or indirectly (e.g., through a trust or an individual account in a pension or profit-sharing plan) any stocks, bonds or other financial instruments or investments that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments?

(b) Do you have any other significant financial investments or interests such as commercial business interests (e.g., sole proprietorships), investment interests (e.g., stock options), or personal investment relationships (e.g., involving parents or grandchildren) that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments?

**If the answer to all of the above questions under INVESTMENT INTERESTS is either “no” or “not applicable,” check here  (NO).**

**If the answer to any of the above questions under INVESTMENT INTERESTS is “yes,” check here  (YES), and briefly describe the circumstances on the last page of this form.**

3. PROPERTY INTERESTS. Taking into account real estate and other tangible property interests, as well as intellectual property (patents, copyrights, etc.) interests, if the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(a) Do you or your spouse or minor children own directly or indirectly any such property interests that could be directly affected?

(b) To the best of your knowledge, do any others with whom you have substantial common financial interests (e.g., employer, business partners, etc.) own directly or indirectly any such property interests that could be directly affected?

**If the answer to all of the above questions under PROPERTY INTERESTS is either "no" or "not applicable," check here  (NO).**

**If the answer to any of the above questions under PROPERTY INTERESTS is "yes," check here  (YES), and briefly describe the circumstances on the last page of this form.**

4. RESEARCH FUNDING AND OTHER INTERESTS. (a) Taking into account your research funding and other research support (e.g., equipment, facilities, industry partnerships, research assistants and other research personnel, etc.), if the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(i) Could the research funding and support for you or your close research colleagues and collaborators be directly affected, or

(ii) If you have any research agreements for current or continuing research funding or support from any party whose financial interests could be directly affected, and such funding or support is directly related to the subject matter of the regulatory process, do such agreements significantly limit your ability to independently conduct and publish the results of your research?

(b) Is the central purpose of the Species Status Assessment Report for which this disclosure form is being prepared a critical review and evaluation of your own work or that of your employer?

(c) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the Species Status Assessment Report?

(d) To the best of your knowledge, will your participation in this peer review process enable you to obtain access to a competitor's or potential competitor's confidential proprietary information?

(e) Could your service as a peer reviewer create a specific financial or commercial competitive advantage for you or others with whom you have substantial common financial interests?

**If the answer to all of the above questions under RESEARCH FUNDING OR OTHER INTERESTS is either "no" or "not applicable," check here  (NO).**

**If the answer to any of the above questions under RESEARCH FUNDING OR OTHER INTERESTS is "yes," check here  (YES), and briefly describe the circumstances below.**

EXPLANATION OF "YES" RESPONSES:

*During your period of service in connection with the activity for which this form is being completed, any changes in the information reported, or any new information, which needs to be reported, should be reported promptly by written or electronic communication to the responsible staff officer.*

*Kevin Hill*

\_\_\_\_\_  
YOUR SIGNATURE

\_\_\_\_\_  
DATE 12/15/2019

Received by: \_\_\_\_\_

Justin Shoemaker  
Fish & Wildlife Biologist  
Ecological Services, Branch of Classification & Recovery  
U.S. Fish and Wildlife Service, Region 6  
Mountain-Prairie Regional Office

\_\_\_\_\_  
Date

## **CURRICULUM VITAE OF KEITH BRYANT GIDO (May 2019)**

**Address:** Kansas State University, Division of Biology  
Ackert Hall  
Manhattan, KS 66506

**Phone:** (785)532-5088

**FAX:** (785)532-6653

**E-mail:** kgido@ksu.edu

### **EDUCATION:**

Ph.D. University of Oklahoma. 1999 (Zoology).

M.S. University of New Mexico. 1995 (Biology).

B.A. New Mexico State University. 1991 (Fisheries and Wildlife Sciences).

### **EMPLOYMENT:**

2019 - University Distinguished Professor, Division of Biology, Kansas State University  
2012 - 2019 Professor, Division of Biology, Kansas State University  
2006 – 2012 Associate Professor, Division of Biology, Kansas State University  
2001 - 2006 Assistant Professor, Division of Biology, Kansas State University  
1999 - 2001 Postdoctoral Research Assistant, Sam Noble Oklahoma Museum of Natural History  
Spring 2000 Postdoctoral Research Assistant, University of Oklahoma Biological Survey  
1996 - 1999 Graduate Teaching Assistant, Department of Zoology, University of Oklahoma  
1995 - 1996 Graduate Research Assistant, Department of Zoology, University of Oklahoma  
1994 - 1995 Graduate Teaching Assistant, Department of Biology, University of New Mexico  
1993 - 1994 Graduate Research Assistant, Department of Biology, University of New Mexico

### **COURSES TAUGHT:**

Fish Ecology

Reservoir Ecology

Ichthyology

Fisheries Management

Introduction to Wildlife, Fisheries, and Conservation Biology

Community Ecology

Reservoir Fish Ecology (Summer Field Course 2002; University of Oklahoma Biological Station)

Independent research for undergraduates (BIOL 698):

Mike Peterson (2002), Nate Franssen (2003), Angie Lickteig (2004), Phil Brinkley (2006), Justin Bengston (2006), Jenifer Nemece (2006), Tyler Kohler (2007), Kelsey Schroeder (2008), Jordan Fey (2008), Brandon Senger (2009), Mitch O'Reilly (2009), Joe Rezik (2011), Dustin Shaw (2011), Sky Hedden (2012), Kelsey Ellis (2014), Michael Denk (2014), Robbie Weber (2014), John Brandt (2014), Emily Johnson (2015), Tanna Fanshier (2017), Austin Earl (2017), Teri Potter (2018), Jenalyn Reichenbach (2019)

## **GRADUATE STUDENTS:**

Layne Knight (MS, December 2004), Jeffrey Falke (MS, December 2004), Tim Strakosh (PhD, December 2005), Nathan Franssen (MS, May 2006), Katie Bertrand (PhD, May 2007), Darren Thornbrugh (MS, May 2008), Tyler Pilger (MS, June 2009), Josh Perkin (PhD, December 2012), Matt Troia (PhD May 2014), James Whitney (MS 2010; PhD 2014), C. Nathan Cathcart (MS 2014), Erika Martin (PhD, 2014), Skyler Hedden (MS, 2015), Casey Pennock (MS, 2016; PhD expected 2020), Bryan Frennett (PhD, expected 2019), Garrett Hopper (PhD, 2019), Lindsey Bruckerhoff (PhD, expected 2020), Elizabeth Renner (PhD, expected 2021), Crosby Hedden (MS, expected 2020), Peter Pfaff (PhD, expected 2024).

## **POST-DOCTORAL RESEARCH ASSOCIATES**

Deb Walks (co-sponsor, 2006 – 2007), Michelle Evans-White (co-sponsor, 2006 – 2007), David Hoeninghaus (co-sponsor, 2006 – 2009), Janine Rüegg (co-sponsor, 2011 – 2016), Josh Perkin (2012 – 2014), James Whitney (2014)

## **GRADUATE STUDENT SUPERVISORY COMMITTEES:**

Mike Quist (PhD, May 2002), Stan Proboszcz (MS, July 2002), Bob Oakes (MS, December 2003), Kym Wilson (MS, December 2005), Jon O'Brien (PhD, June 2006), Justin Murdock (PhD, in progress), Jessica Eichmiller (MS, June 2007), Andy Makinster (MS, 2006), Jesse Fischer (MS, 2007), Jeffery Eitzmann (MS, 2007), Kristen Pitts (MS, 2008), Joshua Schloesser (MS, 2008), Wes Bouska (MS 2009), Andrea Severson (MS 2010), Kyle Winders (MS 2010), Alyssa Standorf (PhD 2011), Sivakumar Mohandass (PhD, 2011), Jason Fischer (MS, 2012), Katie Costigan (PhD 2013), Joe Gerkin (PhD, 2015), Danelle Russel (PhD 2014), Tyler Pilger (PhD, University of New Mexico, 2015), Lucas Driver (PhD, University of North Texas, 2015), Jane Fencel (M.S., 2015), Matt Trentman (MS, 2015), Micah Bennett (PhD, University of Southern Illinois, 2015), Willow Malone (MS, 2016), Rosalee Reese (MS, University of New Mexico, 2016), Ellen Welti (PhD, 2017), Robert Mapes (MS, 2016), Richard Lehrter (MS, in progress), Sophia Bonjour (MS, 2017, University of Southern Illinois), Ryan Greenway (PhD, in progress), Christopher Cheek (PhD, in progress at Purdue University), Henry Camarillo (MS, 2019), James Guinnip (PhD, in progress), Steven Bittner (PhD, in progress, University of Oklahoma), John Coffin (PhD, in progress), Cody Craig (PhD, in progress, Texas State University), Haoyu Zang (PhD, DNF).

## **RESEARCH INTERESTS:**

Conservation of native fish communities  
Effects of fishes in ecosystems  
Top-down versus bottom-up processes in aquatic ecosystems  
Ecological effects and management of introduced species  
Patterns of long-term variation in fish assemblages  
Assemblage structure and population dynamics of freshwater fish communities

## **HONORS AND AWARDS:**

Fisheries Excellence Award, North Central Division of the American Fisheries Society, 2019  
Donald W. Tinkle Research Excellence Award, Southwestern Association of Naturalists, 2015  
Outstanding Graduate Faculty Award, Division of Biology, Kansas State University, 2012  
Best Paper Presentation, Kansas Chapter of the American Fisheries Society, 2003  
George Miksch Sutton Award in Conservation Research, 2001  
University of Oklahoma, Zoology Department Award for Excellence in Graduate Student Teaching, 1999  
Wilks Award finalist, Southwestern Association of Naturalists, 1999  
Jimmie Pigg Student Travel Award, 1999  
Outstanding Student Member NMSU Student Chapter of AFS, 1991  
Ocie Grey Memorial Scholarship, 1991  
Anthony Juliana Memorial Scholarship, 1990

### **RESEARCH GRANTS AT KANSAS STATE UNIVERSITY:**

Kansas State University, *Biomonitoring of fish and macroinvertebrates in streams draining Colbert Hills Golf Course*. \$10,500. Oct 2001 - June 2003.

Kansas State University Small Research Grant (USRG), *Food-web structure of invasive species in their native and introduced ranges*. \$3,500. Nov 2001 - June 2002.

Kansas NSF EPSCoR. *Interactive Effects of Disturbance Frequency and Species Composition on Ecosystem Functioning of Intermittent Streams: A test of Future Climatic Change Scenarios*. \$49,907. Jun. 2002 - Aug. 2003.

Kansas Department of Wildlife and Parks. *Effects of largemouth bass on habitat use by Topeka shiners, red shiners, and bluntnose minnows: implications for susceptibility to predation*. \$36,580. Jan. 2003 - Dec. 2003.

Kansas NSF EPSCoR. Ecological Genomics Project (Subproject: Mike Herman and Loretta Johnson, PIs): *Heat Shock Proteins and Temperature Adaptation by Native Minnows of Kansas* (with Gerald Reeck). Sep. 2003 – Aug. 2005. Approximately \$36,000.

United States Department of the Interior, Bureau of Reclamation. *Trophic relationships between Colorado pikeminnow (Ptychocheilus lucius) in the San Juan River*. Mar. 2003 - Mar. 2006. \$130,000.

National Science Foundation. *REU Site: Conservation of the Tallgrass Prairie Ecosystem* (Brett Sandercock PI). \$169,954. May 2003 - Apr. 2006

United States Department of the Interior, GAP analysis program (with Walter Dodds). *Kansas Aquatic Gap*. \$210,166. Jul. 2001 - Jun. 2005.

Kansas Department of Wildlife and Parks. *Effects of water willow on age-0 centrarchids in Kansas reservoirs*. \$131,778. Jan 2001 - Dec. 2005.

National Science Foundation Long-Term Ecological Research Program. *LTER V: Long-term research on grassland dynamics and global change*. J.M. Blair (PI), J.M. Briggs, D.C. Hartnett, L.C. Johnson, A.K. Knapp and others). \$4,680,000 (approximately \$25,000/yr to Gido's lab). November 1, 2002 – October 31, 2008

Kansas Department of Parks and Wildlife, *Building models to predict species occurrences in Kansas streams*. \$149,480. August 2004 - July 2009.

National Science Foundation. *Interactive Effects of Disturbance Frequency and Species Composition on Ecosystem Functioning of Intermittent Streams: A test of Future Climatic Change Scenarios*. \$320,000. Jan 2005 – Dec 2007



- United State Department of the Interior, GAP analysis program. *Lower Colorado River Aquatic Gap*. \$60,286. May 2004 – June 2005.
- Kansas NSF EPSCoR. *Requirements for specialized research transport equipment: a unique airboat to study shallow reservoirs and rivers of the Great Plains*. J.H. Thorpe (PI), S.J. Randtke, F. deNoyelles, K. Gido. \$33,333. Sept. 2004 – Aug. 2005.
- EPA STAR grant. *Ecosystem thresholds and alternate states in Great Plains rivers and streams: cascading effects of anthropogenic hydrologic disturbance*. W. Dodds (PI), K. With, K. Gido, and J. Koelliker. \$300,000. Mar. 2005 – Mar. 2007.
- Kansas NSF EPSCoR. *Forecasting ecological change in the Central Plains*. L. Krishtalka and W.K. Dodds (Co-Directors, Gido leader of Aquatic Group). \$3,200,000 (Aquatic Group budget approximately \$200,000). Mar. 2006 – Mar. 2009.
- New Mexico Department of Game and Fish. *Characterizing long-term changes in fish assemblages of the Gila River basin*. \$15,000. May 2007 - June 2009.
- Kansas Department of Wildlife and Parks. *Viability of fragmented streams in Kansas: effects of river impoundment on population genetic structure of a sentinel-species, Semotilus atromaculatus*. \$47,101. May 2008 – December 2009.
- U.S. Fish and Wildlife Service. *Consequences of Stream Fragmentation and Climate Change for Rare Great Plains Fishes*. \$23,576. June 2010 – September 2010.
- New Mexico Department of Game and Fish. *Informed Management of Native Fishes: Targeting Critical Life Stages of Nonnatives for Mechanical Removal*. \$203,000. August 2007 – June 2011.
- National Science Foundation Long-Term Ecological Research Program. *Konza Prairie LTER VI: Grassland Dynamics and Long-Term Trajectories of Change*. J.M. Blair (PI), W.K. Dodds, D.C. Hartnett, A. Joern, J.B. Nippert. \$5,640,000 (approximately \$30,000/yr to Gido's lab). November 1, 2008 – October 31, 2014.
- New Mexico Department of Game and Fish. *Quantifying Basal Resource Productivity of Native and Non-Native Fishes in the Gila River Basin Fish Assemblages*. \$118,004. March 2009 – June 2012
- Kansas Department of Wildlife and Parks. *Mapping the occurrence of stream obstructions in the state of Kansas*. \$34,118. June 2010 – November 2011.
- New Mexico Department of Game and Fish. *Stream Fish Assemblages Monitoring Data and Decision-Support Model for Enhanced Critical Conservation Decision-Making in New Mexico*. \$91,690. July 2010 – June 2012.
- Kansas Department of Wildlife and Parks (Melinda Daniels, Co-PI). *Seasonal Fish Assemblages and Habitat Effects Near Bowersock Dam: Implications For Fish Passage*. \$103,336. March 2010 – December 2011.
- Kansas Department of Wildlife and Parks (Melinda Daniels Co-PI). *Reproductive life history of pelagic spawning fishes*. \$124,473. April 2011 – August 2013.
- U.S. Bureau of Reclamation. *Use and importance of tributaries to sustaining native fish communities in San Juan River*. \$292,648. September 2011 – September 2015.
- National Science Foundation (W. Dodds and K.Gido). *Collaborative Research: Scale, Consumers and Lotic Ecosystem Rates (SCALER): Centimeters to Continents*. \$1,198,081. August 2011 – August 2016.
- U.S. Bureau of Reclamation. *Metacommunity Dynamics of Gila River Fishes*. \$187,152. September 2011 – September 2013 (no cost extension through September 2014).

- Wildlife Management Institute. *Conservation Priorities for Great Plains Fish Communities Based on Riverscape Connectivity and Genetic Integrity of Populations*. \$128,587. August 2012 – September 2013.
- Wildlife Management Institute. *Mapping and Predicting Groundwater-Mediated Hydrologic Connectivity for Great Plains Prairie Rivers and Streams*. \$84,218. October 2013 – September 2014 (no-cost extension through June 2015).
- National Science Foundation (Matt Troia). *DISSERTATION RESEARCH: Forecasting Global Warming Effects on Developmental Performance of Prairie Stream Fishes Along the River Continuum*. \$12,695. June 2013 – May 2014.
- New Mexico Department of Game and Fish. *Effects of the Whitewater-Baldy Complex Fire on Warmwater Fishes in the Gila River Basin, New Mexico*. \$170,076. Jan 2014 – June 2016.
- National Science Foundation. *COLLABORATIVE RESEARCH: Shifting hotspots: how do consumer aggregations interact to influence resource heterogeneity and fluxes in streams?* \$282,080. 4/1/2015 – 3/31/2018.
- Kansas Department of Wildlife and Parks. *Efficacy of Fish Passage through the Lincoln Street Fishway on the Arkansas River, Kansas*. \$114,251. June 2015 – July 2017.
- National Parks Service. *Determine Implications of Non-Native Stocked Fish on Native Stream Communities at TAPR*. \$22,770. September 2015 – September 2018.
- National Parks Service. *Management Plan for the federally endangered Topeka shiner (Notropis topeka) within Tallgrass Prairie National Preserve*. \$24,750. August 2015 – September 2018.
- National Parks Service. *Assessing geomorphological conditions of Tallgrass Prairie National Park upland prairie stream reaches at TAPR*. \$23,759. August 2015 – August 2018.
- Kansas Department of Wildlife and Parks. *Relative contribution of gizzard shad to food webs in small Kansas impoundments*. \$280,000. March 2017 – December 2020.
- U.S. Fish and Wildlife Service. *Multi-scale factors influencing occurrences of Topeka Shiner (Notropis topeka) in the Flint Hills, Kansas*. \$126,393. February 2017 – May 2022.
- U.S. Bureau of Reclamation. *Population size, mobility and early life history of Razorback Suckers in the San Juan River – Lake Powell complex*. \$1,133,713. August 2017 – September 2022.
- U.S. Bureau of Reclamation. *Habitat Assessment for Spikedace and Loach Minnow*. \$247,900. August 2018 – July 2021.
- U.S. Geological Survey, John Wesley Powell Center for Analysis and Synthesis (Wenger, S., M. Freeman, A. Walters and K. Gido). *Synthesizing Multiple Long-Term Datasets to Test Flow Ecology Relationships to Inform Water Resources Management*. \$35,402. April 2019.
- National Parks Service. *Determine Status of Topeka Shiners and Potential for Propagation and Reintroduction throughout TAPR*. \$54,639. May 2019 – September 2023.
- National Parks Service. *Assess the Geomorphic Condition of Fox and Palmer Creeks at Tallgrass Prairie National Preserve (TAPR)*. \$19,749. May 2019 – September 2023.

## PROFESSIONAL ORGANIZATIONS:

American Fisheries Society  
Southwestern Association of Naturalists  
Society of Freshwater Science

Desert Fishes Council

**PROFESSIONAL SERVICES:**

Editorial Board, *Freshwater Science*, 2012 - present  
US Army Corps of Engineers, Sustainable Rivers Program for the Kansas River, Steering Committee, 2017 – present  
Board of Governors, Southwestern Association of Naturalist, 2007 – 2010, 2018 - 2021  
Kansas Alliance for Wetlands and Streams Advisor, 2017 - present  
Glen Canyon Dam Adaptive Management Program, Independent Review Panel, 2017-2018  
Glen Canyon Dam Adaptive Management Program's fisheries program review panel, 2016  
National Science Foundation Panel Member (2004, 2005, 2006, 2015, 2016)  
National Science Foundation ad hoc proposal reviewer (2007, 2008, 2010, 2011, 2015, 2016)  
San Juan River Recovery and Implementation Program Flow Evaluation Workshop, 2015  
STREON working group, National Ecological Observatory Network, 2013 - 2015  
President, Kansas Chapter of the American Fisheries Society, 2013-2014  
Science Advisory Team, NSERC HydroNet Program, 2010 - 2014  
Board of Editors, *Ecological Applications*, 2007 - 2010  
Gila River Science Panel, 2009  
Rio Grande Silvery Minnow Recovery Plan Peer Review, 2007  
Arkansas River Shiner Science Advisory Board, 2003 – 2004  
Foundation for Biology Committee, KSU Division of Biology, 2003 – 2007  
Coordinator of Kansas Aquatic Gap Initiative, 2001-2007  
Raney Awards committee (chair 2002), American Society of Ichthyologist and Herpetologists 2000-2002  
Skinner Committee, American Fisheries Society 2001 - 2002  
Proposal review panel for Grand Canyon Monitoring and Research Center 2001  
Proposal reviews: Middle Rio Grande Valley Endangered Species Act Collaborative Program, Science Subcommittee 2002 and 2003 (9 grants reviewed); Maryland Sea Grant 2001  
Animal Facilities Committee, University of Oklahoma 1998  
Chairman, Publications Committee, UNM Biology Graduate Student Association 1994  
President of NMSU Chapter of American Fisheries Society 1990-1991  
Secretary NMSU Chapter of American Fisheries Society 1988-1989

**PEER-REVIEWED PUBLICATIONS** (\* indicates KSU post doc or graduate students):

130. Parr, T.B., C.C. Vaughn and K.B. Gido. In press. Animal effects on dissolved organic carbon lability in an algal controlled ecosystem. *Freshwater Biology*.
129. \*Hopper, G.W., **K.B. Gido**, C.A. Pennock, S.C. Hedden, C.M. Tobler, C.K. Hedden and L.A. Bruckerhoff. In press. Biomass loss and species turnover during severe drought shift stream community excretion stoichiometry. *Freshwater Biology*.
128. \*Frenette, B.D., L.A., Bruckerhoff,\* M. Tobler and **K.B. Gido**. In press. Temperature effects on performance and physiology of two prairie stream minnows. *Conservation Physiology*.
127. \*Cathcart, C.N., **K.B. Gido**, and H.W. Brandenburg. In press. Spawning locations within and among tributaries influence Flannelmouth Sucker offspring experience. *Transactions of the American Fisheries Society*.

126. \*Hopper, G.W., T.G. Popjoy, **K.B. Gido**, and C.C. Vaughn. In press. Freshwater mussels alter fish distributions at fine spatial scales through habitat subsidies. *Freshwater Science*.
125. \*Pennock, C.A., M. Farrington and **K.B. Gido**. In press. Feeding ecology of co-occurring early life stage suckers in a regulated river. *Transactions of the American Fisheries Society*.
124. Perkin, J.S., T.A. Starks, C.A. Pennock\*, **K.B. Gido**, G.W. Hopper\*, S.C. Hedden. In press. Extreme drought causes fish recruitment failure in a fragmented Great Plains riverscape. *Ecohydrology*.
123. Correa, E.C., F.D. Oliveira Roque, R. M. Utz, **K.B. Gido**. In press. Effects of macroconsumers on benthic communities across a gradient of vegetation loss in tropical karst streams. *Hydrobiologia*.
122. \*Bruckerhoff, L.A. and **K.B. Gido**. In press. Assessing site-selection strategies for modeling the influence of landscape factors on stream fish assemblages. American Fisheries Society symposium.
121. **Gido, K.B.**, D.L. Propst, J.E. Whitney, S.C. Hedden, T.J. Pilger, and T.F. Turner. 2019. Pockets of resistance: response of arid-land fish communities to climate, hydrology, and wildfire. *Freshwater Biology* 64:761–777.
120. Franssen, N.R., E.I. Gilbert, D.L. Propst and **K.B. Gido**. 2019. Hatchery-reared endangered Colorado Pikeminnow (*Ptychocheilus lucius*) undergo an uncharacteristic gradual transition to piscivory after introduction to the wild. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 29:24-38.
119. \*Hopper, G.W., **K.B. Gido**, C.C. Vaughn, T.B. Parr, T.G. Popejoy, C.L. Atkinson, and K.K. Gates. 2018. Spatial and temporal distribution of the biomass of dominant animal consumer groups mediates their influence on nutrient heterogeneity in streams. *Oecologia* 188:1133-1144.
118. \*Cathcart, C.N., C.A. Pennock\*, C.A. Cheek, M.C. McKinstry, P.D. MacKinnon, M.M. Conner and **K.B. Gido**. 2018. Waterfall formation at a desert river-reservoir delta isolates endangered fishes. *Reservoir Research and Applications* 34:948-956.
117. Hedden, S.C., E.A. Renner\*, **K.B. Gido** and K.J. Hase. 2018. Impacts of small impoundments on an intermittent headwater stream community. *Southwestern Naturalist* 63:34-41.
116. \*Pennock, C.A., C.N. Cathcart, S.C. Hedden, R.E. Weber, and **K.B. Gido**. 2018. Fine-scale movement and habitat use of a prairie stream fish assemblage. *Oecologia* 186:831-842.
115. Rolls, R.J., J. Heino, D.S. Ryder, B.C. Chessman, I.O. Grown, R.M. Thompson, **K.B. Gido**. 2018. Scaling biodiversity responses to hydrological regimes. *Biological Reviews* 93:971-995.
114. \*Cathcart, N.C., **K.B. Gido**, M.C. McKinstry, P.D. MacKinnon. 2018. Patterns of Fish Movement at a Desert River Confluence. *Ecology of Freshwater Fishes* 27:492-505.
113. \*Pennock, C.A., D. Bender, J. Hofmeier, J.A. Mounts, R. Waters, V.D. Weaver, and **K.B. Gido**. 2018. Can Fishways Mitigate Fragmentation Effects on Great Plains Fish Communities? *Canadian Journal of Fisheries and Aquatic Sciences* 75:121-130.
112. Perkin, J.S., **K.B. Gido**, J.A. Falke, K.D. Fausch, H. Crockett, E.R. Johnson, J. Sanderson. 2017. Groundwater declines are linked to changes in Great Plains stream fish assemblages. *Proceedings of the National Academy of Sciences* 114:7373–7378.

111. Kerezszy, A., **K.B. Gido**, M. Magalhães, and P. Skelton. 2017. The biota of intermittent rivers and ephemeral streams: fishes. Pages 273 – 297 in: *Intermittent Rivers: Ecology and Management* (eds. T. Datry, N. Bonada and A. Boulton). Elsevier.
110. Vanni, M.J. and 73 co-authors. 2017. A global database of nitrogen and phosphorus excretion rates of aquatic animals. *Ecology* 98: 1475-1475.
109. Pilger, T.J., **K.B. Gido**, D.L. Propst, J.E. Whitney\*, and T.F. Turner. 2017. River network architecture, genetic effective size, and distributional patterns predict differences in genetic structure across species in a dryland stream fish community. *Molecular Ecology* 26: 2687-2697.
108. \*Whitney, J.E., **K.B. Gido**, S.C. Hedden\*, G.L. Macpherson, T.J. Pilger, D.L. Propst, and T.F. Turner. 2017. Identifying the source population of fish re-colonizing an arid-land stream following wildfire-induced extirpation using otolith microchemistry. *Hydrobiologia* 797: 29-45.
107. \*Troia, M.J. and **K.B. Gido**. 2017. Testing metabolic cold adaptation as a driver of warm-water fish species replacement along the river continuum. *Environmental Biology of Fishes* 100:265-279.
106. Utz, R.M., S.D. Cooper, **K.B. Gido** and J.R. Steward. 2017. Exclusion of fish and invertebrates from benthic patches across water conductivity levels using high-frequency (10 Hz) pulses and adjustable electrical settings. *Freshwater Science* 36:151–161.
105. \*Pennock, C.A., **K.B. Gido**, J.S. Perkin\* and V.D. Weaver. 2017. Collapsing range of an endemic Great Plains minnow, peppered chub *Macrhybopsis tetranema*. *American Midland Naturalist* 177:57-68.
104. \*Pennock, C.A. and **K.B. Gido**. 2017. Density-dependence of herbivorous Central Stoneroller *Campostoma anomalum* in stream mesocosms. *Ecology of Freshwater Fishes* 26:313–321.
103. \*Hedden, S.C. and **K.B. Gido**. 2016. Movement distances and activity of introduced flathead catfish *Pylodictis olivaris* in the upper Gila River basin, New Mexico, and potential impacts on native fishes. *Southwestern Naturalist* 61:210-216.
102. \*Martin, E.C., **K.B. Gido**, N. Bello, and W.K. Dodds. 2016. Increasing fish taxonomic and functional richness affects ecosystem properties of small headwater prairie streams. *Freshwater Biology* 61:887-898.
101. \*Pennock, C.A., B.D. Frenette\*, M.J. Waters\* and **K.B. Gido**. 2016. Survival and Tag Retention of Southern Redbelly Dace *Chrosomus erythrogaster* Injected with Two Sizes of Passive Integrated Transponder (PIT) Tags. *North American Journal of Fisheries Management* 36:1386–1394.
100. \*Hedden, S.C., J.E. Whitney and **K.B. Gido**. 2016. Introduced Flathead Catfish *Pylodictis olivaris* Consumptive Demand on Native Fishes of the Upper Gila River, New Mexico. *North American Journal of Fisheries Management* 36:55–61.
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#### MANUSCRIPTS IN REVIEW OR PREPARATION:

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- Bruckerhoff, L.A. and K.B. Gido. In prep. Effect of predation and land use on stream fish community structure.

#### BOOKS:

- Kansas Fishes Committee (D.A. Distler, M.E. Eberle, D.R. Edds, **K.B. Gido**, S.G. Haslouer, D.G. Huggins, T.D. Mosher, W.J. Stark, J.R. Tomelleri, J.R. Triplett, E.O. Wiley). 2014. *Kansas Fishes*. University Press of Kansas, Lawrence.
- Gido, K.B.** and D.A. Jackson (eds.). 2010. *Community Ecology of Stream Fishes: Concepts, Techniques and Approaches*. American Fisheries Society Symposium Series 73, Bethesda, MD. 684 pp.

#### **BOOK REVIEWS:**

- K.B. Gido** and G.W. Hopper. 2018. Beautifully Grotesque Fish of the American West. *Great Plains Research* 28:222-222.
- K.B. Gido**. 2014. Ecology of North American Freshwater Fishes (Ross, S). *Transactions of the American Fisheries Society*
- K. B. Gido**. 2006. Fishes of Oklahoma, 2<sup>nd</sup> edition. (Miller, R. and H. Robison). *Great Plains Research* 16:102.
- K. B. Gido**. 2003. Management and Ecology of Lake and Reservoir Fisheries (Edited by I.G. Cowx). *Journal of Environmental Quality* 32:1150.

#### **INVITED PRESENTATIONS:**

- Managing aquatic resources in the Anthropocene. Plenary Speaker. Western Association of Fish and Wildlife Agencies 2019 Summer Meeting. Manhattan, KS, July 2019.
- Pockets of resistance: response of arid-land stream communities to climate, hydrology, and wildfire. Department of Natural Resources, Ecology and Management. Iowa State University, November 2018.
- Flint Hills Streams. Symphony on the Flint Hills: Prairie Pavilion Talk. Butler County, KS, June 2018.
- Vanishing rivers in the Great Plains: what can be done to halt the decline in aquatic biodiversity? 10<sup>th</sup> Symposium for European Freshwater Sciences, Olomouc, Czech Republic, July 2017.
- Vanishing rivers in the Great Plains: what can be done to halt the decline in aquatic biodiversity? Auburn University, Department of Biology, November 2016.
- Vanishing groundwater in the Great Plains: what can be done to halt the rapid decline in aquatic biodiversity? University of New Mexico, Department of Biology, March 2016.
- Vanishing groundwater in the Great Plains: what can be done to halt the rapid decline in aquatic biodiversity? University of Georgia, Odum School of Ecology, February 2016.
- Groundwater loss, dams, and drought ratchet down Great Plains stream fish communities. School of Natural Resources, University of Nebraska-Lincoln, May 2015.
- Groundwater loss, dams, and drought ratchet down Great Plains stream fish communities. Department of Zoology, University of Oklahoma, October 2014.
- Meta-community dynamics of desert fishes. Department of Zoology (Ecomunch seminar), University of Oklahoma, October 2014.
- Structural and functional connectivity of stream fishes in an unregulated desert stream. Joint Meeting of Aquatic Scientists. Portland, Oregon, May 2014.
- Metacommunity dynamics in the Gila River. Department of Zoology, University of Wisconsin, October 2013.

- Conservation of Freshwater Fishes. Special Session: The Future of Freshwater Science: an educational session for undergraduates. Society of Freshwater Science Annual Meeting, Jacksonville, Florida, May 2013.
- A metacommunity framework for conservation of Great Plains fishes. Department of Biology, University of North Texas, March 2013.
- A metacommunity framework for conservation of Great Plains fishes. Department of Wildlife and Fisheries Sciences, South Dakota State University, November 2012.
- A metacommunity framework for conservation of Great Plains fishes. Department of Biology, Truman State University, March 2012.
- Connecting the dots: integrating metacommunity and life history theories to enhance native fish conservation. Department of Wildlife and Fisheries Sciences, South Dakota State University, November 2012.
- Conservation of Great Plains Fishes. Plenary Talk. Oklahoma-Texas Aquatic Research Group/Great Plains Limnology Conference, University of Oklahoma Biological Station, October 2011.
- A Metacommunity Framework for Conservation of Great Plains Fishes. University of Missouri, Department of Fisheries and Wildlife Sciences, October 2011.
- Stream Fragmentation Thresholds for a Reproductive Guild of Great Plains Fishes, Great Plains Landscape Conservation Cooperative Webinar. July 2011.
- Long-Term Effects of Natural Flow Regime Mimicry on Native and Nonnative Fishes in the San Juan River, New Mexico and Utah. Keynote speaker. 32<sup>nd</sup> Annual Indiana Water Resources Association Conference, Muncie Illinois. June 2011.
- Response of arid river fish assemblages to environmental flow regulation. Southern Illinois University. April 2011.
- Recruitment dynamics of fishes in the San Juan River. U.S. Fish and Wildlife Fisheries Service, Fisheries Assistant Office. March 2011
- Quantity versus quality: response of arid river fish assemblages to environmental flow regulation. Keynote speaker, NSERC HydroNet Networking Symposium, Winnipeg, Canada. March 2011.
- Interactions of native and nonnative fishes under natural and modified flow regimes. Australian Rivers Institute, Griffith University, Brisbane, Australia. August 2010
- Context dependency of consumer effects in North American prairie streams. Charles Darwin University, Darwin, Australia. July 2010
- Scaling consumer effects across a riverscape: effects of disturbance, nutrient subsidies and trophic complexity on stream ecosystem function. University of Toronto. December 2008
- Scaling consumer effects across a riverscape: effects of disturbance, nutrient subsidies and trophic complexity on stream ecosystem function. University of Southern Mississippi. September 2008
- Scaling consumer effects across a riverscape: effects of disturbance, nutrient subsidies and trophic complexity on stream ecosystem function. Tulane University. September 2008
- Scaling consumer effects across a riverscape: effects of disturbance, nutrient subsidies and trophic complexity on stream ecosystem function. Sam Houston State University. April 2008
- Disturbance mediated effects of stream fishes. University of Arkansas. November 2007.
- Ecosystem services in prairie streams. Western Kentucky University. April 2007.

- Interactive effects of disturbance and species composition on stream ecosystem processes. Oklahoma State University. November 2006.
- Invasive species decouple predator-prey relations: implications for the survival of Colorado pikeminnow. University of Kansas. October 2006
- Conservation of non-coevolved fish assemblages. Emporia State University. January 2006.
- Conservation of non-coevolved fish assemblages. Colorado State University. December 2005.
- Platte-Kansas Partnership Planning Meeting. Kansas Aquatic GAP Overview. 2005. J. Falke, K. Gido, R. Oakes, W. Dodds
- Fish-habitat relationships across spatial scales in prairie streams. August 2004. Symposium: "Influences of Landscapes on Stream Habitats and Biological Communities". American Fisheries Society Annual Meeting, Madison, WI.
- Large-scale factors influencing fish assemblages in the Great Plains. February 2004. Ft. Hays State University, Hays, KS.
- Conservation of prairie stream fishes. December 2003. William Jewell College, Liberty, MO.
- Effects of hydrological processes on the ecology of intermittent prairie streams. September 2003. LTER All Scientist Meeting Workshop on Eco-hydrology, Seattle, WA.
- The use of ecohydrological models to classify conservation priority areas in the Great Plains, U.S.A. August 2003. International Long-term Research Conference, Warsaw, Poland.
- Patterns of Introduced Species in the Great Plains. February 2003. Kansas Aquaculture Association, McPherson, KS.
- Functional Role of Fishes in Ecosystems: How Important is Diversity? October 2002. Creighton University, Omaha, NE.
- Progress and Future Direction of Aquatic GAP in Kansas. August 2002. National Gap Analysis Program Annual Meeting, Sheperdstown, WV.
- Development of an Aquatic GAP program in Kansas. February 2002. Kansas Department of Wildlife and Parks Annual Meeting. Wichita, KS.
- Functional Role of Fishes in Ecosystems: How Important is Diversity? November 2001. Emporia State University.
- Environmental correlates to littoral-zone fish distributions in a large southern reservoir (Lake Texoma, Oklahoma-Texas). February 2001. Kansas Department of Wildlife and Parks Annual Meeting. Pittsburg, KS.
- Effects of large-bodied omnivorous fishes on benthic communities in reservoirs. 2000. North American Benthological Society Special Symposium: Wanted Dead or Alive: the role of fishes in benthic food webs.
- Ecosystem effects of omnivorous fishes in Lake Texoma, Oklahoma-Texas. 1999. University of Oklahoma, Zoology Departmental Seminar.
- Fish assemblages in reservoirs. 1997. North American Lake Management Society annual meeting (Reservoir Ecology Symposium).
- Movements of rainbow trout, *Oncorhynchus mykiss*, in response to experimental flows from Navajo Reservoir, New Mexico. 1993 AZ-NM AFS annual meeting (San Juan River Fisheries Symposium).

*U.S. Fish and Wildlife Service  
Participation in Peer Review of the Status Assessment (SSA) Report  
for the  
Colorado Pikeminnow (Ptychocheilus lucius)*

**BACKGROUND INFORMATION  
AND  
CONFLICT OF INTEREST DISCLOSURE**

NAME: Wayne A. Hubert TELEPHONE: 307-760-8723

ADDRESS: 1063 Colina Drive, Laramie, WY 82072

EMAIL ADDRESS: hubertfisheries@gmail.com

CURRENT EMPLOYER: Retired

This form has two (2) parts:

- Part I – Background Information, and;
- Part II – Conflict of Interest Disclosure.

Please complete both parts, **sign** and **date** the form on the last page, and **return the form** to Justin Shoemaker, U.S. Fish and Wildlife Service, 134 Union Blvd., Suite 670 Lakewood, Colorado 80228, or by email to [justin\\_shoemaker@fws.gov](mailto:justin_shoemaker@fws.gov). **Please retain a copy for your records.**

**PART I  
BACKGROUND INFORMATION**

**INSTRUCTIONS**

Please provide the information requested below regarding **relevant** organizational affiliations, government service, public statements and positions, research support, and additional information (if any). Information is “relevant” if it is related to -- and might reasonably be of interest to others concerning -- your knowledge, experience, and personal perspectives regarding the subject matter for which this form is being completed. If some or all of the requested information is contained in your curriculum vitae (CV), you may prefer to simply attach your CV to this form, supplemented by additional responses or comments below as necessary.



I. ORGANIZATIONAL AFFILIATIONS. Report your relevant business relationships (as an employee, owner, officer, director, consultant, etc.) and your relevant remunerated or volunteer non-business relationships (e.g., professional organizations, trade associations, public interest or civic groups, etc.).

Owner, Hubert Fisheries Consulting, LLC. No current contracts except:  
(1) Peer reviewer, San Juan River Recovery Implementation Program;  
(2) Member, Independent Science Review Panel, Northwest Power and Conservation Council

II. GOVERNMENT SERVICE. Report your relevant service (full-time or part-time) with federal, state, or local government in the United States (including elected or appointed positions, employment, advisory board memberships, military service, etc.).

Aquatic Biologist, Tennessee Valley Authority (1972-1979)

Research Scientist, Cooperative Fish and Wildlife Research Unit Program, Biological Sciences Division, U.S. Geological Survey. Assistant Leader, Iowa Cooperative Fisheries Research Unit (1979-1982). Assistant Leader/Unit Leader, Wyoming Cooperative Fish and Wildlife Research Unit (1982-2010).

III. RESEARCH SUPPORT. Report relevant information regarding both public and private sources of research support (other than your present employer), including sources of funding, equipment, facilities, etc.

No research support.

IV. PUBLIC STATEMENTS AND POSITIONS. List your relevant articles, testimony, speeches, etc., by date, title, and publication (if any) in which they appeared, or provide relevant representative examples if numerous. Provide a brief description of relevant positions of any organizations or groups with which you are closely identified or associated.

Please see attached CV for lists of publications and presentations.

American Fisheries Society, Past President plus numerous chapter and section offices.

V. ADDITIONAL INFORMATION. If there are relevant aspects of your background or present circumstances not addressed above that might reasonably be construed by others as affecting your judgment in matters within the topics addressed in the Species Status

Assessment Report, and therefore might constitute an actual or potential source of bias, please describe them briefly.

None of which I am aware.

## **PART II CONFLICT OF INTEREST DISCLOSURE**

### INSTRUCTIONS

It is essential that a peer reviewer used by the U.S. Fish and Wildlife Service as part of its peer review of Species Status Assessments under the ESA not be compromised by conflict of interest. For this purpose, **the term “conflict of interest” means any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual’s objectivity or (2) could create an unfair competitive advantage for any person or organization.**<sup>1</sup> Except for those situations in which the Service determines that a conflict of interest is unavoidable and promptly and publicly discloses the conflict of interest, no individual can participate in a peer review process used by the Service in a Species Status Assessment if the individual has a conflict of interest that is relevant to the functions to be performed.

The term “conflict of interest” means something more than individual bias. There must be an *interest* that could be directly affected by your participation as a peer reviewer.

Conflict of interest requirements are *objective* and *prophylactic*. They are not an assessment of one’s actual behavior or character, one’s ability to act objectively despite the conflicting interest, or one’s relative insensitivity to particular dollar amounts of specific assets because of one’s personal wealth. Conflict of interest requirements are objective standards designed to eliminate certain specific, potentially compromising situations from arising, and thereby to protect the individual, the Service, and the public interest. The individual and the Service should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the information produced through the peer review simply because of the existence of conflicting interests.

The term “conflict of interest” applies only to *current interests*. It does not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behavior. Nor does it apply to possible interests that may arise in the future but do not currently exist, because such future interests are inherently speculative and uncertain. For example, a pending formal or informal application for a particular job is a current interest, but the mere possibility that one might apply for such a job in the future is not a current interest.

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<sup>1</sup> This definition and the other information in these instructions are drawn from the National Academy of Sciences Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports (May 12, 2003).

The term “conflict of interest” applies not only to the personal interests of the individual but also to the *interests of others* with whom the individual has substantial common financial or other interests if these interests are relevant to the functions to be performed. Thus, in assessing an individual’s potential conflicts of interest, consideration must be given not only to the interests of the individual but also to the interests of the individual’s spouse and minor children, the individual’s employer, the individual’s business partners, and others with whom the individual has substantial common financial or other interests. Consideration must also be given to the interests of those for whom one is acting in a fiduciary or similar capacity (e.g., being an officer or director of a corporation, whether profit or nonprofit, or serving as a trustee).

Such interests could include an individual’s stock holdings in excess of \$10,000 in a potentially affected company or being an officer, director, or employee of the company. Serving as a consultant to the company could constitute such an interest if the consulting relationship with the company could be directly affected or is directly related to the subject matter of the regulatory process.

An individual’s other possible interests might include, for example, relevant patents and other forms of intellectual property, serving as an expert witness in litigation directly related to the subject matter of the regulatory process, or receiving research funding from a party that would be directly affected by the regulatory process if the research funding could be directly affected or is directly related to the subject matter of the regulatory process and the right to independently conduct and publish the results of this research is limited by the sponsor. Consideration would also need to be given to the interests of others with whom the individual has substantial common financial interests -- particularly spouses, employers, clients, and business or research partners.

The following questions are designed to elicit information from you concerning possible conflicts of interest that are relevant to the functions to be performed by your peer review.

1. EMPLOYMENT. (a) If the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(i) If you are employed or self-employed, could your current employment or self-employment (or your spouse’s current employment or self-employment) be directly affected?

(ii) To the best of your knowledge, could any financial interests of your (or your spouse’s) employer or, if self-employed, your (or your spouse’s) clients and/or business partners be directly affected?

(iii) If you are an officer, director or trustee of any corporation or other legal entity, could the financial interests of that corporation or legal entity be directly affected?

(iv) If you are a consultant (whether full-time or part-time), could there be a direct effect on any of your current consulting relationships?

(v) Regardless of the potential effect on the consulting relationship, do you have any current or continuing consulting relationships (including, for example, commercial and professional consulting and service arrangements, scientific and technical advisory board memberships, serving as an expert witness in litigation, or providing services in exchange for honorariums and travel expense reimbursements) that are directly related to the subject matter of the possible government regulatory action or inaction?

(b) If you are or have ever been a U.S. Government employee (either civilian or military), to the best of your knowledge are there any federal conflict of interest restrictions that may be applicable to your service in connection with this peer review?

(c) If you are a U.S. Government employee, are you currently employed by the Service?

**If the answer to all of the above questions under EMPLOYMENT is either “no” or “not applicable,” check here   X   (NO).**

**If the answer to any of the above questions under EMPLOYMENT is “yes,” check here        (YES), and briefly describe the circumstances on the last page of this form.**

2. INVESTMENT INTERESTS. Taking into account stocks, bonds, and other financial instruments and investments including partnerships (but excluding broadly diversified mutual funds and any investment or financial interest valued at less than \$10,000), if the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(a) Do you or your spouse or minor children own directly or indirectly (e.g., through a trust or an individual account in a pension or profit-sharing plan) any stocks, bonds or other financial instruments or investments that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments?

(b) Do you have any other significant financial investments or interests such as commercial business interests (e.g., sole proprietorships), investment interests (e.g., stock options), or personal investment relationships (e.g., involving parents or grandchildren) that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments?

**If the answer to all of the above questions under INVESTMENT INTERESTS is either “no” or “not applicable,” check here  X  (NO).**

**If the answer to any of the above questions under INVESTMENT INTERESTS is “yes,” check here \_\_\_\_\_ (YES), and briefly describe the circumstances on the last page of this form.**

3. PROPERTY INTERESTS. Taking into account real estate and other tangible property interests, as well as intellectual property (patents, copyrights, etc.) interests, if the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(a) Do you or your spouse or minor children own directly or indirectly any such property interests that could be directly affected?

(b) To the best of your knowledge, do any others with whom you have substantial common financial interests (e.g., employer, business partners, etc.) own directly or indirectly any such property interests that could be directly affected?

**If the answer to all of the above questions under PROPERTY INTERESTS is either “no” or “not applicable,” check here  X  (NO).**

**If the answer to any of the above questions under PROPERTY INTERESTS is “yes,” check here \_\_\_\_\_ (YES), and briefly describe the circumstances on the last page of this form.**

4. RESEARCH FUNDING AND OTHER INTERESTS. (a) Taking into account your research funding and other research support (e.g., equipment, facilities, industry partnerships, research assistants and other research personnel, etc.), if the information received by the Service through the peer review process were to provide the basis for government regulatory action or inaction with respect to the Colorado pikeminnow --

(i) Could the research funding and support for you or your close research colleagues and collaborators be directly affected, or

(ii) If you have any research agreements for current or continuing research funding or support from any party whose financial interests could be directly affected, and such funding or support is directly related to the subject matter of the regulatory process, do such agreements significantly limit your ability to independently conduct and publish the results of your research?

(b) Is the central purpose of the Species Status Assessment Report for which this disclosure form is being prepared a critical review and evaluation of your own work or that of your employer?

(c) Do you have any existing professional obligations (e.g., as an officer of a scientific or engineering society) that effectively require you to publicly defend a previously established position on an issue that is relevant to the Species Status Assessment Report?

(d) To the best of your knowledge, will your participation in this peer review process enable you to obtain access to a competitor's or potential competitor's confidential proprietary information?

(e) Could your service as a peer reviewer create a specific financial or commercial competitive advantage for you or others with whom you have substantial common financial interests?

**If the answer to all of the above questions under RESEARCH FUNDING OR OTHER INTERESTS is either "no" or "not applicable," check here   X   (NO).**

**If the answer to any of the above questions under RESEARCH FUNDING OR OTHER INTERESTS is "yes," check here        (YES), and briefly describe the circumstances below.**

EXPLANATION OF "YES" RESPONSES:

*During your period of service in connection with the activity for which this form is being completed, any changes in the information reported, or any new information, which needs to be reported, should be reported promptly by written or electronic communication to the responsible staff officer.*

*Wayne A. Hubert*

Wayne A. Hubert \_\_\_\_\_  
YOUR SIGNATURE

December 16, 1019 \_\_\_\_\_  
DATE

Received by: \_\_\_\_\_

Justin Shoemaker  
Fish & Wildlife Biologist  
Ecological Services, Branch of Classification & Recovery  
U.S. Fish and Wildlife Service, Region 6  
Mountain-Prairie Regional Office

\_\_\_\_\_ Date

## **Wayne A. Hubert**

### **Curriculum Vita**

#### **EDUCATION**

B.S., 1969, Illinois State University, Biology

M.S., 1972, Southern Illinois University-Carbondale, Zoology

Ph.D., 1979, Virginia Polytechnic Institute and State University, Fisheries and Wildlife Science (Fisheries Option)

#### **CERTIFICATIONS**

Certified Fisheries Professional, American Fisheries Society

#### **TECHNICAL TRAINING**

Fish Disease Diagnosis and Treatment Course, Mississippi State University, 1973

Advanced Economics Course, University of Northern Alabama, 1975

Planning Theory Course, University of Wyoming, 1983

Multivariate Statistics Course, University of Wyoming, 1986

Energetics Modeling in Aquatic Ecosystems Short Course, Colorado State University, 1992

Geographic Information Systems Course, University of Wyoming, 1996

Motorboat Operator Instructor Certification Course (DOI), 1997

Principles and Techniques of Electrofishing Course, National Conservation Training Center, 1998

Fisheries Analysis and Simulation Tools Short Course, American Fisheries Society, 1999

Supervisory Challenge in the USGS, 2001

#### **PROFESSIONAL EXPERIENCE**

Aquatic Biologist, Tennessee Valley Authority, Norris, Tennessee, and Muscle Shoals, Alabama, 1972-1979.

Assistant Leader, Iowa Cooperative Fisheries Research Unit, Iowa State University, Ames, Iowa. 1979-1982

Assistant Leader, Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, Wyoming, 1982-2005

Unit Leader, Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, Wyoming 2005-2009

Fisheries Scientist, Hubert Fisheries Consulting, LLC, 2010-present.



## HONORS, AWARDS, RECOGNITION

- 1978 United States delegate to United States-Japan Natural Resources Program (Aquaculture Panel), Tokyo, Japan
- 1980 Special Achievement Award, U.S. Fish and Wildlife Service
- 1986 Special Achievement Award, U.S. Fish and Wildlife Service
- 1988 Special Achievement Award, U.S. Fish and Wildlife Service
- 1989 Quality Performance Award, U.S. Fish and Wildlife Service
- 1990 Special Achievement Award, U.S. Fish and Wildlife Service
- 1991 Special Achievement Award, U.S. Fish and Wildlife Service
- 1991 Cooperative Research Units Center Director's Award for Outstanding Science (Co-recipient with Stanley Anderson and Frederick Lindzey)
- 1992 Special Achievement Award, U.S. Fish and Wildlife Service
- 1993 Special Achievement Award, U.S. Fish and Wildlife Service
- 1998 Award of Excellence for Outstanding Career Accomplishments, Colorado/Wyoming Chapter, American Fisheries Society
- 1998 Excellence in Advising, University of Wyoming
- 1999 Outstanding Dissertation in the Biological Sciences, University of Wyoming, Advisor
- 1999 Award for Excellence in Fisheries Education, American Fisheries Society
- 2000 Outstanding Student Paper, Annual Meeting of the American Fisheries Society, Co-author
- 2000 STAR Award, U.S. Geological Survey
- 2001 Outstanding Dissertation in the Biological Sciences, University of Wyoming, Advisor
- 2002 Outstanding Dissertation in the Biological Sciences, University of Wyoming, Advisor
- 2004 Outstanding Thesis in the Biological Sciences, University of Wyoming, Advisor
- 2005 STAR Award, U.S. Geological Survey
- 2006 Award of Excellence, Western Division, American Fisheries Society
- 2006 Inducted, Fisheries Management Hall of Excellence, American Fisheries Society
- 2007 STAR Award, U.S. Geological Survey
- 2008 STAR Award, U.S. Geological Survey
- 2008 Honorary Life Member, Great Plains Fisheries Workers Association
- 2009 Outstanding Professional Paper, Colorado-Wyoming Chapter, American Fisheries Society
- 2009 Outstanding Student Paper, Colorado-Wyoming Chapter, American Fisheries Society, Co-author
- 2009 Appreciation Award, Wyoming Game and Fish Department
- 2010 Outstanding Mentor, Colorado-Wyoming Chapter, American Fisheries Society
- 2013 Gerald E. Cross Alumni Leadership Award, Virginia Tech
- 2015 Fellow, American Fisheries Society
- 2015 Wyoming Biodiversity Science Award, Biodiversity Institute, University of Wyoming

## PROFESSIONAL SERVICE

### Elected offices:

Secretary-Treasurer, Iowa Chapter, American Fisheries Society, 1980  
 Vice-president, Iowa Chapter, American Fisheries Society, 1981  
 President, Iowa Chapter, American Fisheries Society, 1982  
 Western Division Representative, Fisheries Management Section Executive Committee,  
 American Fisheries Society, 1985-1986  
 Secretary-Treasurer, Colorado/Wyoming Chapter, American Fisheries Society, 1986  
 Vice-president, Colorado/Wyoming Chapter, American Fisheries Society, 1987  
 President, Colorado/Wyoming Chapter, American Fisheries Society, 1988  
 Board of Directors, Wyoming Riparian Association, 1990-1991  
 President-elect, Education Section, American Fisheries Society, 1993  
 President, Education Section, American Fisheries Society, 1994  
 Western Division Representative, Education Section, American Fisheries Society,  
 2001-2003  
 Second vice-president, American Fisheries Society, 2007  
 First vice-president, American Fisheries Society, 2008  
 President-elect, American Fisheries Society, 2009  
 President, American Fisheries Society, 2010  
 Immediate Past President, American Fisheries Society, 2011

### Editorships:

#### Journals:

Editor, North American Journal of Fisheries Management, 1996-1998  
 Associate editor, North American Journal of Fisheries Management, 2001-2003

#### Books:

Kohler, C. C., and W. A. Hubert, editors. 1993. Inland fisheries management in North America. American Fisheries Society, Bethesda, Maryland.  
 Kohler, C. C., and W. A. Hubert, editors. 1999. Inland fisheries management in North America, 2nd edition. American Fisheries Society, Bethesda, Maryland.  
 Irwin, E. R., W. A. Hubert, C. F. Rabeni, H. L. Schramm, Jr., and T. Coon, editors. 1999. Catfish 2000: proceedings of the international ictalurid symposium. American Fisheries Society, Symposium 24, Bethesda, Maryland.  
 McKinstry, M. C., W. A. Hubert, and S. A. Anderson, editors. 2004. Wetlands Ecology and Management in the Intermountain West. University of Texas Press, Austin, Texas.  
 Bonar, S. A., W. A. Hubert, and D. W. Willis, editors. 2009. Standard methods for sampling North American freshwater fishes. American Fisheries Society, Bethesda, Maryland.  
 Hubert, W. A., and M. C. Quist. 2010. Inland fisheries management in North America, 3rd edition. American Fisheries Society, Bethesda, Maryland.

## ACADEMIC SERVICE

### University positions:

Assistant Professor, Department of Animal Ecology, Iowa State University, Ames, Iowa, 1979-1982.

Assistant Professor, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, 1982-1985.

Associate Professor, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, 1985-1992.

Professor, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, 1992-2010.

Professor Emeritus, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, 2011-present.

Adjunct Professor, Ruckelshaus School of the Environment and Natural Resources, University of Wyoming, Laramie, Wyoming, 2002-2009

### Courses taught:

#### Iowa State University:

1980 Advanced Fisheries Management, Animal Ecology 565, 3 hours, 19 students.  
Seminar, Aquaculture Potentials in Iowa, Animal Ecology 500, 1 hour, 14 students.

1981 Advanced Fisheries Management, Animal Ecology 565, 3 hours, 6 students.  
Advanced Fisheries Management, Animal Ecology 543, 3 hours, 9 students.

1982 Fish Health Management, Animal Ecology 545X, 3 hours, 16 students.

#### University of Wyoming:

1982 Seminar, Aquatic Habitat Assessment, Zoology 895M, 1 hour, 12 students.

1983 Aquatic Resource Management, Zoology 690M, 3 hours, 6 students.  
Seminar, Wildlife Mitigation, Zoology 895M, 1 hour, 16 students (taught with Stanley Anderson).

1984 Aquatic Resource Management, Zoology 690M, 3 hours, 6 students.  
Seminar, Aquatic Habitat Assessment, Zoology 895M, 1 hour, 8 students.

1985 Fisheries Management, Zoology 673M, 3 hours, 6 students.  
Seminar, Aquatic Habitat Assessment, Zoology 895M, 1 hour, 13 students.

1986 Advanced Topics in Fishery Management, Zoology 690M, 3 hours, 6 students.

1986 Seminar, Western Reservoir Management, Zoology 895M, 1 hour, 12 students.

1987 Advanced Fisheries Management, Zoology 876, 3 hours, 6 students.

1988 Seminar, Issues in Sport Fisheries Management, Zoology 895M, 1 hour, 12 students.

1989 Advanced Fisheries Management, Zoology 876, 3 hours, 6 students.

1991 Seminar, Issues in Sport Fisheries Management, Zoology 895M, 1 hour, 10 students.

1992 Advanced Fisheries Management, Zoology 5840, 3 hours, 11 students.

- 1993 Seminar, Coldwater Stream Ecology, Zoology 5890, 1 hour, 10 students.  
 1994 Advanced Fisheries Management, Zoology 5840, 3 hours, 12 students  
 1995 Seminar, Coldwater Stream Ecology, Zoology 5890, 1 hour, 10 students  
 1996 Advanced Fisheries Management, Zoology 5840, 3 hours, 8 students  
 1997 Seminar, Aquatic Ecosystem Management, Zoology 5890, 16 students  
 1998 Advanced Fisheries Management, Zoology 5840, 3 hours, 5 students  
 1999 Seminar, Issues in Fisheries Management, Zoology 5890, 10 students  
 2000 Advanced Fisheries Management, Zoology 5840, 8 students  
 2001 Seminar, Issues in Fisheries Management, Zoology 5890, 8 students  
 2002 Advanced Fisheries Management, Zoology 5840, 8 students  
 2004 Advanced Fisheries Management, Zoology 5840, 6 students  
 2006 Advanced Fisheries Management, Zoology 5840, 4 students  
 2008 Advanced Fisheries Management, Zoology 5840, 4 students  
 2009 Advanced Fisheries Management, Zoology 5840, 3 students

Theses supervised:

Iowa State University:

- Schmitt, Dennis N. 1981. Aspects of the biology and movement of yellow perch, *Perca flavescens*, in the Okoboji Lakes, Dickinson County, Iowa.  
 Sandheinrich, Mark B. 1982. Interspecific resource partitioning by yellow perch in a stratified, glacial lake.  
 Stang, Douglas L. 1982. Habitat partitioning and utilization of adult and juvenile fishes in Clear Lake, Iowa.  
 Ricci, Edward D. 1982. Organochlorine insecticides and polychlorinated biphenyls in the sediments of the Red Rock Reservoir, Iowa.  
 Southall, Peter, D. 1982. Paddlefish movement and habitat use in the Upper Mississippi River.  
 Hurley, Stephen T. 1983. Habitat associations and movements of shovelnose sturgeon in Pool 13 of the Upper Mississippi River.

University of Wyoming:

- Lanka, Robert P. 1985. Modeling trout standing stock in small Wyoming streams based upon easily measured habitat and geomorphological characteristics. (Thomas Wesche, Co-chair)  
 Sherman, Loris E. 1985. A study of myxosporeans in Wyoming fishes.  
 Chisholm, Ian M. 1985. Winter stream conditions and brook trout habitat use on the Snowy Range, Wyoming. (Thomas Wesche, Co-chair)  
 Schneidervin, Roger W. 1985. Zooplankton stocks and the nature of size-selective predation by fishes in Flaming Gorge Reservoir.  
 Chapman, Duane C. 1985. Initial gas bladder inflation in striped bass: effects of access to air-water interface and gradually increasing salinity levels, and a method for separation of fish with uninflated and inflated gas bladders.  
 Parsons, Bradford G. 1986. Selected aspects of kokanee spawning ecology in two tributaries to Flaming Gorge Reservoir.

- Kozel, Steven J. 1987. Trends in habitat features and trout abundance among unaltered stream reaches on the Medicine Bow National Forest. (Thomas Wesche, Co-chair)
- Smith, John B. 1987. Movement and spawning of fishes in Crazy Woman Creek, a tributary to the Powder River, Wyoming.
- Wolff, Steven W. 1987. Evaluation of trout habitat formation due to flow enhancement in a previously ephemeral stream. (Thomas Wesche, Co-chair)
- Winkle, Paul L. 1988. Relations between brook trout abundance and habitat features in beaver ponds in southeastern Wyoming. (Frank Rahel, Co-chair)
- Gerhardt, David R. 1989. Population dynamics, movement, and spawning habitat of channel catfish in the Powder River system, Wyoming-Montana.
- Grost, Richard T. 1989. A description of brown trout redds in Douglas Creek, Wyoming.
- Guenther, Paula M. 1989. Minimum pool requirements for the enhancement and maintenance of salmonid fisheries in small Wyoming reservoirs.
- Larscheid, Joseph G. 1989. Differentiation of three strains of rainbow trout in Flaming Gorge Reservoir using scale pattern analysis.
- O'Shea, Daniel T. 1990. Population dynamics and distribution of channel catfish in Grayrocks Reservoir, Wyoming.
- Norling, Bradley A. 1991. Roosting activities and site selection of sandhill cranes along the Platte River, Nebraska. (Stanley Anderson, Co-chair)
- Wilson, Erika C. 1991. Nesting and foraging ecology of interior least terns on sand pits in central Nebraska. (Stanley Anderson, Co-chair)
- Eaglin, Gregory S. 1991. Influences of logging and road construction on trout streams, Medicine Bow National Forest.
- Harris, Douglas D. 1991. Brown trout in Douglas Creek, Medicine Bow National Forest: Population and habitat response to enhanced minimum flow.
- Mullner, Scott A. 1992. Assessment of spawning-habitat mitigation in the Green River system, Wyoming-Utah.
- Stonecypher, R. Wes, Jr. 1992. Manipulating incubation temperature to prolong trout embryo development. (William Gern, Co-chair)
- Gipson, Robert D. 1992. Assessment of the potential influence of reservoir drawdown on kokanee (*Oncorhynchus nerka*) reproduction in Flaming Gorge Reservoir, Wyoming-Utah.
- Dickerson, Kimberly K. 1993. Toxicity assessment of water from basins receiving irrigation drain water.
- Herger, Lillian G. 1993. Assessment of a basin-wide habitat inventory technique relative to Colorado cutthroat trout.
- Alexander, Charles B. 1993. History and genetic variation of salmonid brood stocks, Wyoming.
- Patton, Timothy M. 1993. The potential for sport fisheries in the Laramie River downstream from Grayrocks Reservoir, Wyoming.
- LaVoie, William J., IV. 1993. Stream margin habitat and feeding of young-of-year brown trout in Douglas Creek, Medicine Bow National Forest.
- Chamberlain, Charles B. 1993. Evaluation criteria for trout in the lakes and reservoirs of Wyoming.

- Marwitz, Todd D. 1994. Walleye fisheries in the North Platte River drainage of Wyoming.
- Brown, Duffy J. 1994. Waterfowl and waterbird use of beaver-created wetlands in southeastern Wyoming. (Stanley Anderson, Co-chair)
- Kruse, Carter G. 1995. Genetic purity, habitat, and population characteristics of Yellowstone cutthroat trout in the Greybull River drainage, Wyoming. (Frank Rahel, Co-chair)
- Lawrence, Jean M. 1995. Waterbirds of the Laramie Plains lakes. (Stanley Anderson, Co-chair)
- Gryska, Andrew D. 1996. Development of population monitoring protocols and description of several life history aspects of Kendall Warm Springs dace *Rhinichthys osculus thermalis*.
- Elliott, Anthony G. 1996. Diversity and factors affecting diversity of small mammals, stream macroinvertebrates, reptiles, and amphibians within F. E. Warren Air Force Base, Cheyenne, Wyoming. (Stanley Anderson, Co-chair)
- Krueger, Kirk L. 1996. Assessment of lentic sport fisheries for burbot and sauger in the Bighorn/Wind River drainage, Wyoming.
- Simpkins, Darin G. 1997. Winter movements and habitat use by small rainbow trout in the Big Horn River, below Boysen Reservoir, Wyoming.
- Pru, Cindy A. 1998. Winter habitat conditions in trout streams of southeastern Wyoming. (Thomas Wesche, Co-chair)
- Covington, James Scott. 1999. Watershed-scale assessment of instream flows for trout in low-gradient, alluvial valley streams.
- Hebdon, Jason Lance. 1999. Prey availability, diet and body condition of sub-adult trout from fall through winter in regulated rivers, Wyoming.
- Goldstein, Jack N. 1999. Effects of geothermal effluents on rainbow trout and brown trout in the Firehole River, Yellowstone National Park, Wyoming.
- Hyatt, Matthew W. 2000. Assessment of the statistical properties of the relative weight ( $Wr$ ) index for salmonid fishes.
- Lipsey, Tamara S. B. 2001. Using elevation, channel slope, and stream width to predict the occurrence of native warmwater fish species in the North Platte River drainage in Wyoming. (Frank Rahel, Co-chair)
- Bailey, Paul E. 2001. Influence of environmental factors and accessibility by humans on dynamics of salmonid fisheries of high-mountain lakes.
- Joyce, Michael P. 2001. Reproduction of Snake River cutthroat trout in spring streams tributary to the Salt River.
- Burckhardt, Jason C. 2002. The effects of habitat features on whirling disease across a Rocky Mountain watershed.
- Schwanke, Craig J. 2002. Abundance and movement of the rainbow trout spawning stock in the upper Naknek River, Alaska.
- Amadio, Craig J. 2003. Factors affecting the distribution and life history of sauger in the Wind River watershed upstream from Boysen Reservoir.
- Barrineau, Christina A. 2003. Evaluation of the design of instream habitat structures relative to winter trout habitat in a Wyoming foothills stream.
- Lindstrom, Jason W. 2003. Habitat selection and movements of adult cutthroat trout and brook trout from fall through winter in a meandering alluvial-valley stream.

- Smith, Mark A. 2003. Effects of a plant-and-krill-based diet on the performance of Yellowstone cutthroat trout broodfish.
- Rhea, Darren T. 2004. Factors affecting assessments of salmonid populations in Wyoming reservoirs using hydroacoustic techniques and floating experimental gillnets.
- Beatty, Ryan J. 2005. Catostomid spawning migrations and late-summer fish assemblages in lower Muddy Creek, an intermittent watershed in southern Carbon County. (Frank Rahel, Co-chair)
- Bower, Michael R. 2005. Distributions and habitat associations of bluehead suckers, flannelmouth suckers, and roundtail chubs in the upper Muddy Creek watershed of southern Carbon County, Wyoming. (Frank Rahel, Co-chair)
- Kuhn, Kristopher M. 2005. Seasonal movements and habitat use of adult saugers in the Little Wind River drainage, Wyoming.
- Jensen, Brian. 2006. Migration, transition range and landscape use by greater sage-grouse (*Centrocercus urophasianus*). (Stanley Anderson, Chair in Memoriam)
- Purcell, Melanie. 2006. Pygmy rabbit (*Brachylagus idahoensis*) distribution and habitat selection in Wyoming. (Stanley Anderson, Chair in Memoriam)
- Lionberger, Patrick S. 2006. Juvenile sauger nurseries and fish assemblages in the Wind River watershed and Boysen Reservoir, Wyoming
- Kaiser, Rusty. 2006. Recruitment by greater sage-grouse in association with natural gas development in western Wyoming. (Stanley Anderson, Chair in Memoriam)
- Compton, Robert I. 2007. Population fragmentation and white sucker introduction affect populations of bluehead suckers, flannelmouth suckers, and roundtail chub in a headwater stream system, Wyoming. (Frank Rahel, Co-chair)
- Sanderson, Travis B. 2007. Habitat diversity and access to tributaries are important to adult Snake River cutthroat trout residing in the Salt River, Wyoming.
- Sweet, Diana E. 2007. Movement patterns and habitat associations of native and introduced catostomids in a tributary system of the Colorado River.
- Wilhite, Jerry W. 2007. Use of infrared aerial photographs to identify and assess habitat needed by native fish in rivers.
- Becker, Scott A. 2008. Habitat selection, condition, and survival of Shiras moose in Northwest Wyoming. (Matthew Kauffman, Co-chair)
- Abrahamse, Mathew S. 2009. Abundance and structure of burbot *Lota lota* populations in lakes and reservoirs of the Wind River drainage, Wyoming.
- Cook, Nathan A. 2009. Status of anthropogenically-isolated populations of Colorado River cutthroat trout in the upper North Fork Little Snake River drainage, Wyoming. (Frank Rahel, Co-chair)
- Senecal, Anna C. 2009. Fish assemblage structure and flow regime of the Powder River, Wyoming: an assessment of the potential effects of flow augmentation related to energy development.
- Banks, David T. 2009. Abundance, habitat use, and movements of bluehead suckers, flannelmouth suckers, white suckers, and hybrid catostomids in Little Sandy Creek, a tributary to the Big Sandy River in Wyoming.
- Laske, S.M. 2010. Lentic habitat use of roundtail chub *Gila robusta* and overlap with two nonnative piscivores, brown trout *Salmo trutta* and lake trout *Salvelinus namaycush*.

Dissertations supervised:

University of Wyoming:

- Young, Michael K. 1989. Effect of substrate composition on the survival to emergence of Colorado River cutthroat trout and brown trout.
- Patton, Timothy M. 1997. Distribution and status of fishes in the Missouri River drainage in Wyoming: implications for identifying conservation areas. (Frank Rahel, Co-chair)
- Kruse, Carter G. 1998. Influence of non-native trout and geomorphology on distributions of indigenous trout in the Yellowstone River drainage of Wyoming. (Frank Rahel, Co-chair)
- Isaak, Daniel J. 2001. A landscape ecological view of trout populations across a Rocky Mountain watershed.
- Dare, Matthew R. 2001. Habitat use and movement by two trout species during winter under experimental flow regimes in a regulated river.
- Mullner, Scott A. 2001. Techniques for watershed-scale trout management.
- Simpkins, Darin G. 2002. Responses of body condition and composition of juvenile rainbow trout to fasting, activity, and water temperature. (Carlos Martinez del Rio, Co-chair)
- Holloran, Matthew J. 2005. Greater sage-grouse (*Centrocercus urophasianus*) population response to natural gas field development in western Wyoming. (Stanley Anderson, Chair in Memoriam)
- Slater, Steven. 2006. Wyoming's riparian bird communities: issues of scale and human-caused vegetation and landscape change. (Stanley Anderson, Chair in Memoriam)
- Bigelow, Patricia. 2009. Predicting areas of lake trout spawning habitat within Yellowstone Lake, Wyoming.

**CONTINUING EDUCATION PROVIDED**

- 1980 Fish Disease Diagnosis and Treatment, Iowa State University, February 26-28, 56 students.
- 1982 Statistics for Fisheries Managers, Rathbun, Iowa, June 8-10, 30 students.
- 1986 Trend Assessment for Fisheries Managers, Casper, Wyoming, March 12-16, 40 students.
- 1990 Chemical Use in Fisheries Management and Fish Culture, Laramie, Wyoming, February 13-15, 50 students.
- 1993 Technical Writing for Fisheries Managers, Laramie, Wyoming, January 19-22, 30 students (taught with Harold Bergman)
- 1995 Use and Application of Fish Toxicants, Laramie, Wyoming, March 10-14, 20 students
- 1996 Conservation Biology, Fort Collins, Colorado, March 19, 25 students
- 1996 Stream Ecology for Habitat Managers, Laramie, Wyoming, September 9-13, 24 students



- 1999 Whirling Disease Workshop for Wyoming Game and Fish Department, Laramie, Wyoming, December 8-9, 40 participants
- 2002 Rotenone and Antimycin Use in Fisheries Management, Laramie, Wyoming, January 9-10, 30 students
- 2002 Technical Writing Workshop for Aquatic Habitat Biologists, Laramie, April 25-26, 10 students
- 2002 Outboard Motorboat Operators Training, Denver, Colorado, May 21-23, 25 students
- 2004 Warmwater Stream Assessment, Casper, Wyoming, March 8-9, 30 students
- 2005 Rotenone and Antimycin Use in Fisheries Management, Laramie, Wyoming, January 12-14, 30 students
- 2007 Watershed Definitions, Models, and Management Applications for Aquatic and Terrestrial Habitat Biologists, Wyoming Game and Fish Department, Laramie, Wyoming, February 8, 40 students
- 2008 Estimation Methods for Absolute and Relative Measures of Fish Populations. Continuing education course at the Montana Chapter, American Fisheries Society meeting, Billings, Montana, February 12, 60 students
- 2008 Estimation of Relative Abundance of Fishes. Continuing education course at the Western Division, American Fisheries Society meeting, Portland, Oregon, May 4, 30 students
- 2009 Rotenone and Antimycin Use in Fisheries Management, Laramie, Wyoming, January 27-28, 28 students
- 2009 Rotenone and Antimycin Use in Fisheries Management. U.S. Environmental Protection Agency, Region 8 Inspectors, Field Training, Cheyenne, Wyoming, April 24, 20 students
- 2010 Estimation of Relative Abundance of Fishes. Continuing education course as the Colorado-Wyoming Chapter, American Fisheries Society meeting, Laramie, Wyoming, March 2010, 25 students.

## PUBLICATIONS

Peer reviewed:

- Hubert, W. A., and J. M. Krull. 1973. Seasonal fluctuations of aquatic macroinvertebrates in Oakwood Bottoms Greentree Reservoir. *American Midland Naturalist* 90:177-185.
- Krull, J. M., and W. A. Hubert. 1973. Seasonal abundance and diversity of benthos in a southern Illinois swamp. *Chicago Academy of Science Natural History Miscellanea* 190:1-4.
- Hubert, W. A., and M. C. Warner. 1975. Control of *Epistylis* on channel catfish in raceways. *Journal of Wildlife Disease* 11:241-244.
- Hubert, W. A., and M. C. Warner. 1975. Note on the occurrence of *Leuceruthrus micropteri* (Trematoda, Azygiidae) in bass, *Micropterus* spp., from the Tennessee River. *Journal of Wildlife Disease* 11:38-39.

- Warner, M. C., and W. A. Hubert. 1975. Note on the occurrence of *Acetodextra amuiri* (Stafford) (Trematoda, Heterophidae) in channel catfish from the Tennessee River. *Journal of Wildlife Disease* 11:37.
- Hubert, W. A. 1976. Age and growth of three black bass species in Pickwick Reservoir. *Proceedings of the Southeastern Association of Game and Fish Commissioners* 29:126-134.
- Hubert, W. A. 1976. Estimation of the fecundity of smallmouth bass, *Micropterus dolomieu*, found in the Wilson Dam tailwater, Alabama. *Journal of the Tennessee Academy of Science* 51:142-144.
- Hubert, W. A. 1977. Comparative food habits of smallmouth and largemouth bass in Pickwick Reservoir. *Journal of the Alabama Academy of Science* 48:167-168.
- Pirie, W. R., and W. A. Hubert. 1977. Assumptions in statistical analysis. *Transactions of the American Fisheries Society* 106:646-648.
- Warden, R. L., Jr., and W. A. Hubert. 1977. Spring stomach contents of *Lepomis* from the Wilson Dam tailwater. *Journal of the Alabama Academy of Science* 48:179-183.
- Hubert, W. A., and V. P. Mitchell, Jr. 1979. Ovarian development of smallmouth bass in Pickwick Reservoir. *Journal of the Alabama Academy of Science* 50:87-95.
- Hubert, W. A. 1980. Aquaculture uses of power plant waste heat. Pages 18-31 in L. B. Goss, editor. *Factors affecting power plant waste utilization*. Pergamon Press, New York.
- Hubert, W. A., and R. T. Lackey. 1980. Habitat of adult smallmouth bass in a Tennessee River reservoir. *Transactions of the American Fisheries Society* 109:364-370.
- Warden, R. L., Jr., and W. A. Hubert. 1980. Comparative life history features of young-of-year smallmouth and largemouth bass in Pickwick Reservoir. *Journal of the Tennessee Academy of Science* 55:58-60.
- Hubert, W. A. 1981. Spring movement of smallmouth bass in the Wilson Dam tailwater, Alabama. *Journal of the Tennessee Academy of Science* 56:94-96.
- Hubert, W. A. 1981. Book review. *Materials and methods used in marking experiments in fishery research* (R. Jones). *Fisheries* 6(3):57-58.
- Hubert, W. A., and E. D. Ricci. 1981. Factors influencing dieldrin and DDT residues in carp from the Des Moines River, Iowa. *Pesticide Monitoring Journal* 15:111-116.
- Hughes, D. F., and W. A. Hubert. 1981. Fecundity of largemouth bass from Pickwick Reservoir, Tennessee River. *Journal of the Alabama Academy of Science* 52:101-105.
- Carroll, B. B., W. A. Hubert, and R. L. Warden. 1982. Flow-through systems/North America. Pages 373-382 in T. Klaus, editor. *Aquaculture in heated effluents and recirculation systems*. Vol. II. Heenemann Verlagsgesellschaft mBH, Berlin.
- Hubert, W. A., and D. N. Schmitt. 1982. Factors influencing hoop net catches in channel habitats of Pool 9, Upper Mississippi River. *Proceedings of the Iowa Academy of Science* 89:84-88.
- Hubert, W. A., and D. N. Schmitt. 1982. Factors influencing catches of drifted trammel nets in a pool of the Upper Mississippi River. *Proceedings of the Iowa Academy of Science* 89:153-154.
- Schmitt, D. N., and W. A. Hubert. 1982. Comparison of cleithra and scales for age and growth of yellow perch. *Progressive Fish-Culturist* 44:87-88.

- Hubert, W. A., and M. B. Sandheinrich. 1983. Patterns of variation in gill-net catch and diet of yellow perch in a stratified Iowa lake. *North American Journal of Fisheries Management* 3:156-162.
- Ricci, E. D., W. A. Hubert, and J. J. Richard. 1983. Organochlorine residues in sediment cores of a midwestern reservoir. *Journal of Environmental Quality* 12:418-421.
- Schmitt, D. N., and W. A. Hubert. 1983. Growth and condition of yellow perch in the Okoboji Lakes, Iowa. *Iowa State Journal of Research* 57:233-244.
- Schmitt, D. N., and W. A. Hubert. 1983. Movement of yellow perch between East and West Okoboji lakes, Iowa. *Proceedings of the Iowa Academy of Science* 90:103-106.
- Hubert, W. A. 1984. Passive capture techniques. Pages 95-111 *in* L. A. Nielsen and D. L. Johnson, editors. *Fisheries Techniques*. American Fisheries Society, Bethesda, Maryland.
- Hubert, W. A., G. E. Darnell, and D. E. Dolk. 1984. Late-winter abundance and substrate associations of benthos in Pool 13, Upper Mississippi River. *Proceedings of the Iowa Academy of Science* 91:147-152.
- Hubert, W. A., E. D. Ricci, and J. J. Richard. 1984. Variation in polychlorinated biphenyl levels in common carp from a primarily agricultural drainage. *Hydrobiologia* 113:293-287.
- Niemeier, P. E., and W. A. Hubert. 1984. The aquatic vascular flora of Clear Lake, Cerro Gordo County, Iowa. *Proceedings of the Iowa Academy of Science* 91:57-66.
- Sandheinrich, M. B., and W. A. Hubert. 1984. Intraspecific resource partitioning by yellow perch (*Perca flavescens*) in a stratified lake. *Canadian Journal of Fisheries and Aquatic Sciences* 41:1745-1752.
- Southall, P. D., and W. A. Hubert. 1984. Habitat use by adult paddlefish in the Upper Mississippi River. *Transactions of the American Fisheries Society* 113:125-131.
- Stang, D. L., and W. A. Hubert. 1984. Spatial separation of fishes captured in passive gear in a turbid prairie lake. *Environmental Biology of Fishes* 11:309-314.
- Chisholm, I. M., and W. A. Hubert. 1985. Expulsion of dummy transmitters by rainbow trout. *Transactions of the American Fisheries Society* 114:766-767.
- Hubert, W. A., and D. N. Schmitt. 1985. Summer and fall hoop net catches in fish in an Upper Mississippi River pool. *Iowa State Journal of Research* 60:39-50.
- Chisholm, I. M., and W. A. Hubert. 1986. Influence of stream gradient on standing stocks of brook trout in the Snowy Range, Wyoming. *Northwest Science* 60:137-139.
- Keiter, R. B., and W. A. Hubert. 1986. Legal considerations in challenging external threats to Glacier National Park. *Environmental Management* 11:121-126.
- Niemeier, P. E., and W. A. Hubert. 1986. The 85-year history of the aquatic macrophyte community in a eutrophic prairie lake (United States). *Aquatic Botany* 25:83-89.
- Schneidervin, R. W., and W. A. Hubert. 1986. A rapid technique for otolith removal from salmonids and catostomids. *North American Journal of Fisheries Management* 6:287.
- Anderson, S. H., W. A. Hubert, C. Patterson, A. J. Redder, and D. Duvall. 1987. Distribution of vertebrates on the Bighorn Canyon National Recreation Area. *Great Basin Naturalist* 47:512-521.

- Chapman, D. C., W. A. Hubert, and U. T. Jackson. 1987. Phosphorus retention by grass carp (*Ctenopharyngodon idella*) fed sago pondweed (*Potamogeton pectinalis*). *Aquaculture* 65: 221-225.
- Chapman, D. C., W. A. Hubert, and U. T. Jackson. 1987. Influence of access to air and of salinity on gas bladder inflation in striped bass. *Progressive Fish-Culturist* 50:23-27.
- Chisholm, I. M., W. A. Hubert, and T. A. Wesche. 1987. Winter stream conditions and brook trout habitat use on the Snowy Range, Wyoming. *Transactions of the American Fisheries Society* 116:176-184.
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- Hurley, S. T., W. A. Hubert, and J. G. Nickum. 1987. Habitat associations and movements of shovelnose sturgeon in the Upper Mississippi River. *Transactions of the American Fisheries Society* 116:655-662.
- Kozel, S. J., and W. A. Hubert. 1987. Age estimates of brook trout from high-elevation Rocky Mountain streams using scales and otoliths. *Northwest Science* 61:216-219.
- Lanka, R. R., W. A. Hubert, and T. A. Wesche. 1987. Relations of geomorphology to stream habitat and trout standing stock in small Wyoming streams. *Transactions of the American Fisheries Society* 116:21-28.
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- Wesche, T. A., V. R. Hasfurther, W. A. Hubert, and Q. D. Skinner. 1987. Assessment of flushing flow recommendations in a steep, rough, regulated tributary. Pages 59-69 in J. F. Craig and J. B. Kemper, editors. *Regulated Streams: Advances in Ecology*. Plenum Press, New York.
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- Hubert, W. A. 1988. Altitude as the determinant of distribution of largemouth bass and smallmouth bass in Wyoming. *North American Journal of Fisheries Management* 8:386-387.
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- Young, M. K., W. A. Hubert, and T. A. Wesche. 1989. An evaluation of variation in permeability measurements when using the MARK VI standpipe. *Canadian Journal of Fisheries and Aquatic Sciences* 46:447-450.
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- Gerhardt, D. R., and W. A. Hubert. 1991. Population dynamics of a lightly exploited channel catfish stock in the Powder River system, Wyoming-Montana. *North American Journal of Fisheries Management* 9:332-340.
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- Grost, R. T., W. A. Hubert, and T. A. Wesche. 1991. Field comparison of three devices used to sample substrate in small streams. *North American Journal of Fisheries Management* 11:347-351.
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- Smith, J. B., and W. A. Hubert. Seasonal patterns of fish abundance in Crazy Woman Creek, a tributary to the Powder River. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 12, 1987. PLATFORM
- Hubert, W. A. Fisheries habitat research on the Medicine Bow National Forest. Laramie Plains Wildlife Association, Laramie, Wyoming, April 28, 1987. INVITED, PLATFORM
- Kozel, S. J., and W. A. Hubert. Results of fish habitat relationships (FHR) testing on the Medicine Bow National Forest with implications for riparian grazing. Riparian Workshop, Medicine Bow National Forest, Saratoga, Wyoming, August 4, 1987. INVITED, PLATFORM
- Parsons, B., and W. A. Hubert. The influence of available habitat on kokanee spawning site selection in two tributaries to Flaming Gorge Reservoir. Annual Meeting, American Fisheries Society, Winston-Salem, North Carolina, September 15, 1987. PLATFORM
- Hubert, W. A. New insights on salmonid biology. Fish Habitat Management Workshop, U.S. Forest Service, Fort Collins, Colorado, November 9, 1987. INVITED, PLATFORM

- Hubert, W. A., and L. E. Noel. Western crayfish: status, hazard, and forage potential. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Fort Collins, Colorado, March 2, 1988. INVITED, PLATFORM
- Young, M. K., R. T. Grost, W. A. Hubert, and T. A. Wesche. Sediment impacts on embryonic salmonids: considerations, knowledge, and needs in the intermountain Rockies. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Fort Collins, Colorado, March 3, 1988. PLATFORM
- Winkle, P. L., W. A. Hubert, and F. J. Rahel. Development of a habitat quality index for beaver impounded trout streams in southeastern Wyoming. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Fort Collins, Colorado, March 3, 1988. PLATFORM
- Johnson, S. L., F. J. Rahel, and W. A. Hubert. Factors influencing the size structure of brook trout populations in beaver ponds in southeastern Wyoming. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Fort Collins, Colorado, March 3, 1988. PLATFORM
- Kozel, S. J., and W. A. Hubert. Changes in habitat features and trout abundance with increasing size among unaltered stream reaches. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, March 3, 1988. PLATFORM
- Wolff, S. W., T. A. Wesche, and W. A. Hubert. Evaluation of trout habitat formation due to flow enhancement in a previously ephemeral stream. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Fort Collins, Colorado, March 3, 1988. PLATFORM
- Hubert, W. A., and S. J. Kozel. GAWS validation in Wyoming. Wildlife, Fisheries, Range, Soils, and watershed Workshop, U.S. Forest Service, Saratoga, Wyoming, March 3, 1988. INVITED, PLATFORM
- Hubert, W. A. Fisheries research on the Medicine Bow National Forest. Fisheries Research/Management Coordination Meeting, U.S. Forest Service and Wyoming Game and Fish Department, Laramie, Wyoming, April 11, 1988. INVITED, PLATFORM
- Kozel, S. J., W. A. Hubert, and M. G. Parsons. Habitat features influencing brown trout abundance in unimpacted drainages of the Medicine Bow National Forest, Wyoming. National Workshop on Brown Trout Biology, Southern Division American Fisheries Society, Asheville, North Carolina, April 28, 1988. INVITED, PLATFORM
- Hubert, W. A. Brown trout stocking concepts in Wyoming. National Workshop on Brown Trout Biology, Southern Division American Fisheries Society, Asheville, North Carolina, April 29, 1988. INVITED, PLATFORM
- Guenther, P. M., and W. A. Hubert. Impacts of drawdown on trout in High Plains reservoirs and potential for management. Regional Symposium, North American Lake Management Society, Denver, Colorado, June 10, 1988. PLATFORM
- Hubert, W. A. Research on sediment, flows, and fish. Governor's Economic Development Seminar and Field Tour, Carbon County, Wyoming, August 25, 1988. INVITED, PLATFORM
- Wolff, S. W., T. A. Wesche, and W. A. Hubert. Assessment of a flow enhancement project as a riparian and fishery habitat mitigation effort. Symposium,

- Restoration, Creation and Management of Wetland and Riparian Ecosystems in the American West, Denver, Colorado, November 14, 1988. PLATFORM
- Hubert, W. A. Brown trout population and habitat changes associated with an increase in minimum flows of Douglas Creek, Wyoming. 'Water Talk,' Wyoming Water Resources Center, Laramie, Wyoming, January 27, 1989. INVITED, PLATFORM
- Hubert, W. A. Salmonid habitat research by the Wyoming Cooperative Unit. Seminar, Iowa State University Department of Animal Ecology, February 17, 1989. INVITED, PLATFORM
- Gerhardt, D. R., and W. A. Hubert. Spawning habitat of channel catfish in the Powder River, Wyoming-Montana. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 1, 1989. PLATFORM
- Grost, R. T., and W. A. Hubert. A description of the characteristics of natural brown trout redds. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 2, 1989. PLATFORM
- Young, M. K., W. A. Hubert, and T. A. Wesche. From laboratory to field: potential application of a survival to emergence model for Colorado River cutthroat trout. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 2, 1989. PLATFORM
- Guenther, P. M., and W. A. Hubert. Minimum pools may not have to mean minimum fish. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 2, 1989. PLATFORM
- Wolff, S. W., W. A. Hubert, and T. A. Wesche. Evaluation of brown trout population and habitat changes due to an increase in the minimum flow in Douglas Creek, Wyoming. Annual Meeting, American Fisheries Society, Laramie, Wyoming, March 2, 1989. PLATFORM
- Hubert, W. A. Recent research on trout habitat ecology in small streams. Seminar, Utah State University, Department of Fish and Wildlife Science, March 8, 1989. INVITED, PLATFORM
- Young, M., W. A. Hubert, and T. A. Wesche. The effect of fine sediment on survival to emergence of salmonids: problems and perspectives in the central Rocky Mountains. Annual Meeting, Western Division American Fisheries Society, Seattle, Washington, July 5, 1989. PLATFORM
- Wolff, S. W., W. A. Hubert, and T. A. Wesche. Brown trout population and habitat changes associated with an increase in minimum flows of Douglas Creek, Wyoming. Annual Meeting, American Fisheries Society, Anchorage, Alaska, September 8, 1989. PLATFORM
- Young, M., W. A. Hubert, and T. A. Wesche. A comparison of different measures of substrate and their relation to survival to emergence of embryonic salmonids. Annual Meeting, American Fisheries Society, Anchorage, Alaska, September 8, 1989. PLATFORM
- Wesche, T. A., and W. A. Hubert. Geomorphic relations to stream habitat and trout standing stocks in small Wyoming streams. Wild Trout IV Conference, Yellowstone National Park, Wyoming, September 18, 1989. INVITED, PLATFORM

- Hubert, W. A. Riparian zone management: how big will it get? Annual Statewide Meeting, Wyoming Game and Fish Department Fish Division, Douglas, Wyoming, November 14, 1989. INVITED, PLATFORM
- O'Shea, D. T., and W. A. Hubert. Assemblages of small fish in the habitat types along the Platte River, Nebraska. Annual Meeting, Great Plains Fishery Workers Association, Casper, Wyoming, March 6, 1990. PLATFORM
- Hubert, W. A. Do educators meet the needs of managers? Annual Meeting, Western Division American Fisheries Society, Sun Valley, Idaho, July 9, 1990. INVITED, PLATFORM
- Grost, R. T., W. A. Hubert, and T. A. Wesche. Egg location in and substrate composition of brown trout redds in Douglas Creek, Wyoming. Annual Meeting, Western Division American Fisheries Society, Sun Valley, Idaho, July 10, 1990. PLATFORM
- Harris, D. D., W. A. Hubert, and T. A. Wesche. Diurnal shifts in habitat use by young-of-year brown trout. Annual Meeting, Western Division American Fisheries Society, Sun Valley, Idaho, July 10, 1990. PLATFORM
- Guenther, P. M., and W. A. Hubert. Determination of minimum pool levels for small Wyoming impoundments. Annual Meeting, American Fisheries Society, Pittsburgh, Pennsylvania, August 27, 1990. PLATFORM
- Gerhardt, D. R., and W. A. Hubert. Spawning habitat selection by channel catfish in a river system. Annual Meeting, American Fisheries Society, Pittsburgh, Pennsylvania, August 27, 1990. PLATFORM
- Hubert, W. A. Patterns of trout distributions in Wyoming. Seminar, University of Wyoming, Casper College Center and Casper College Department of Biology, Casper, Wyoming, September 9, 1990. INVITED, PLATFORM
- Hubert, W. A. Fish habitat assessment. Seminar, University of Wyoming, Department of Zoology and Physiology, Laramie, Wyoming, January 25, 1991. INVITED, PLATFORM
- Hubert, W. A. Riparian management: fact, fantasy, controversy, cooperation. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 13, 1991. INVITED, PLATFORM
- Eaglin, G., and W. A. Hubert. Impacts of logging on trout in forested streams on the Medicine Bow National Forest. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 14, 1991. PLATFORM
- Harris, D. D., W. A. Hubert, and T. A. Wesche. Brown trout population and habitat response to enhanced minimum flows in Douglas Creek. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 14, 1991. PLATFORM
- O'Shea, D. T., and W. A. Hubert. Population dynamics of channel catfish in Grayrocks Reservoir. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 14, 1991. PLATFORM
- Stonecypher, R. W., Jr., and W. A. Hubert. Temperature control and manipulation of incubation period of spring-spawning trout stocks. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 14, 1991. PLATFORM

- Hubert, W. A. Current water resources research projects being conducted by the Wyoming Cooperative Unit. Seminar, Wyoming State Water Forum, Cheyenne, Wyoming, May 30, 1991. INVITED, PLATFORM
- O'Shea, D. T., and W. A. Hubert. Channel catfish management in Wyoming reservoirs. Warmwater Fisheries Symposium I, Phoenix, Arizona, June 6, 1991. PLATFORM
- Eaglin, G., and W. A. Hubert. Impacts of logging and road construction on trout in streams on the Medicine Bow National Forest, Wyoming. Annual Meeting, American Fisheries Society, an Antonio, Texas, September 10, 1991. PLATFORM
- Terrell, J. W., J. M. Thompson, and W. A. Hubert. Use of regression quantiles to identify species-habitat relationships. Annual Meeting, American Fisheries Society, San Antonio, Texas, September 11, 1991. PLATFORM
- Harris, D. D., W. A. Hubert, and T. A. Wesche. Brown trout population responses to enhanced minimum flow in Douglas Creek. Annual Meeting, American Fisheries Society, San Antonio, Texas, September 11, 1991. PLATFORM
- Hubert, W. A. Movement toward and underlying theory for trout stream habitat assessment. Seminar, University of Wyoming Department of Range Management, Laramie, Wyoming, October 30, 1991. INVITED, PLATFORM
- Gipson, R., and W. Hubert. Implications of winter drawdown on reproduction of shoreline-spawning kokanee in Flaming Gorge Reservoir. International Symposium, North American Lake management Society, Denver, Colorado, November 14, 1991. PLATFORM
- Hubert, W., and P. Guenther. Relations between trout standing stocks, non-salmonid fishes, and features of reservoirs in Wyoming. International Symposium, North American Lake Management Society, Denver, Colorado, November 14, 1991. PLATFORM
- Chamberlain, C. B., and W. A. Hubert. Comparisons of two body condition indices,  $K$  and  $W_r$ , among rainbow trout populations in Wyoming. Joint Meeting, Colorado/Wyoming and Bonneville Chapters American Fisheries Society, Grand Junction, Colorado, February 27, 1992. PLATFORM
- Gipson, R. D., and W. A. Hubert. Habitat selection by shoreline-spawning kokanee in Flaming Gorge Reservoir. Joint Meeting, Colorado/Wyoming and Bonneville Chapters American Fisheries Society, Grand Junction, Colorado, February 28, 1992. PLATFORM
- Patton, T. A., and W. A. Hubert. An assessment of the status of the warmwater sport fishery in the Laramie River downstream from Grayrocks Dam. Joint Meeting, Colorado/Wyoming and Bonneville Chapters American Fisheries Society, Grand Junction, Colorado, February 28, 1992. PLATFORM
- Mullner, S. A., and W. A. Hubert. Spawning habitat mitigation for kokanee in the Green River downstream from Fontenelle Dam. Joint Meeting, Colorado/Wyoming and Bonneville Chapters American Fisheries Society, Grand Junction, Colorado, February 28, 1992. PLATFORM
- LaVoie, W. J., and W. A. Hubert. Habitat use by young-of-year brown trout during fall in Douglas Creek, Medicine Bow National Forest, Wyoming. Joint Meeting,

- Colorado/Wyoming and Bonneville Chapters American Fisheries Society, Grand Junction, Colorado, February 28, 1992. PLATFORM
- Hubert, W. A., and D. D. Harris. Sampling time influences habitat suitability curves for young-of-year brown trout. Annual Meeting, Western Division American Fisheries Society, Fort Collins, Colorado, July 15, 1992. INVITED, PLATFORM
- LaVoie, W. J., and W. A. Hubert. Habitat use by young-of-year brown trout during fall in Douglas Creek, Medicine Bow National Forest. Annual Meeting, Western Division American Fisheries Society, Fort Collins, Colorado, July 15, 1992. PLATFORM
- Gipson, R. D., and W. A. Hubert. Habitat selection by shoreline-spawning kokanee in Flaming Gorge Reservoir, Wyoming-Utah. Annual Meeting, Western Division American Fisheries Society, Fort Collins, Colorado, July 15, 1992. PLATFORM
- Mullner, S. A., and W. A. Hubert. Spawning habitat mitigation for kokanee in the Green River downstream from Fontenelle Dam. Annual Meeting, Western Division American Fisheries Society, Fort Collins, Colorado, July 15, 1992. PLATFORM
- Hubert, W. A. Overview of riparian definitions. Riparian Workshop, Wyoming Game and Fish Department, Laramie, Wyoming, August 20, 1992. INVITED, PLATFORM
- Hubert, W. A. Gradients affect habitat in mountain streams. Seminar, University of Wyoming Department of Range Management, September 8, 1992. INVITED, PLATFORM
- Mullner, S. A., and W. A. Hubert. Mitigation spawning habitat for kokanee through the construction of spawning channels in the Green River downstream from Fontenelle Dam, Wyoming. Annual Meeting, American Fisheries Society, Rapid City, South Dakota, September 14, 1992. PLATFORM
- Hubert, W. A. The Powder River: a relatively pristine stream on the Great Plains. Symposium on Restoration Planning for the Rivers of the Mississippi River Ecosystem. Annual Meeting, American Fisheries Society, Rapid City, South Dakota, September 16, 1992. INVITED, PLATFORM
- Gipson, R. D., and W. A. Hubert. Habitat selection by shoreline-spawning kokanee and the possible effects of winter drawdown on spawning success in Flaming Gorge Reservoir, Wyoming-Utah. Annual Meeting, American Fisheries Society, Rapid City, South Dakota, September 17, 1992. PLATFORM
- Hubert, W. A., and S. J. Kozel. Effects of channel slope and discharge on habitat in streams. Annual Meeting, Wyoming State Section Water Resources Association, Laramie, Wyoming, October 28, 1992. INVITED, PLATFORM
- Patton, T. M., and W. A. Hubert. Fishes of side-channel, backwater, and main-channel habitats of the Laramie River downstream from Grayrocks Dam, Wyoming. Annual Meeting, Great Plains Fisheries Workers Association, Scottsbluff, Nebraska, February 2, 1993. PLATFORM
- Dickerson, K. K., W. A. Hubert, and H. L. Bergman. Toxicity assessment of water from basins receiving irrigation drainwater. Annual Meeting, Rocky Mountain Chapter Society of Environmental Toxicology and Chemistry, Denver, Colorado, May 14, 1993. PLATFORM

- Hubert, W. A. Potentials of aquaculture for Wyoming citizens. Wyoming Water Resources Seminar, Central Wyoming College, Riverton, Wyoming, January 6, 1993. INVITED, PLATFORM
- Hubert, W. A. Analysis of riparian characteristics. Workshop, Common Sense Riparian Area Management, Sheridan, Wyoming, February 23, 1993. INVITED, PLATFORM
- Herger, L. G., W. A. Hubert, and M. K. Young. Assessment of the basin-wide habitat inventory technique in relation to Colorado River cutthroat trout populations of the Little Snake River drainage. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 3, 1993. PLATFORM
- Wenzel, C. R., T. A. Wesche, and W. A. Hubert. Flushing flow requirements of a large, regulated Wyoming river to maintain trout spawning habitat. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 3, 1993. PLATFORM
- LaVoie, W. J., and W. A. Hubert. Diurnal feeding patterns and use of stream margin habitat by young-of-year brown trout. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 3, 1993. PLATFORM
- Patton, T. M., and W. A. Hubert. Fish assemblages in three habitat types of the Laramie River downstream from Grayrocks Reservoir, Wyoming. Annual Meeting, Colorado/Wyoming Chapter American Fisheries Society, Laramie, Wyoming, March 3, 1993. PLATFORM
- Hubert, W. A. Response of brown trout to enhanced minimum flows. Seminar, National Ecology Research Center, Fort Collins, Colorado, March 31, 1993. INVITED, PLATFORM
- Hubert, W. A. Ethics in applied ecology. Seminar, University of Wyoming Department of Zoology and Colorado State University Department of Fish and Wildlife Biology, April 13, 1993. INVITED, PLATFORM
- Hubert, W. A., and S. J. Kozel. Channel slope and discharge: gradients that affect models that predict standing stocks of trout in streams. Annual Meeting, Western Division American Fisheries Society, Sacramento, California, July 26, 1993. INVITED, PLATFORM
- Patton, T. M., and W. A. Hubert. Fish assemblages in three habitat types of the Laramie River downstream from Grayrocks Reservoir, Wyoming. Annual Meeting, American Fisheries Society, Portland, Oregon, August 30, 1993. PLATFORM
- LaVoie, W. J., and W. A. Hubert. Diurnal feeding patterns and use of stream margin habitat by young-of-year brown trout. Annual Meeting, American Fisheries Society, Portland, Oregon, September 2, 1993. PLATFORM
- Herger, L. G., W. A. Hubert, and M. K. Young. Assessment of the basin-wide habitat inventory technique in relation to Colorado River cutthroat trout populations of the Little Snake River drainage, Wyoming. Annual Meeting, American Fisheries Society, Portland, Oregon, September 2, 1993. PLATFORM
- Hubert, W. A. Mississippi River fishes and management issues. Seminar, Wyoming Student Chapter American Fisheries Society, October 6, 1993. INVITED, PLATFORM



- Hubert, W. A., and S. A. Mullner. Evaluation of mitigative spawning channels for kokanee in the Green River downstream from Fontenelle Dam. Annual Meeting, Wyoming State Section American Water Resources Association, Laramie, Wyoming, November 3, 1993. PLATFORM
- Patton, T., and W. Hubert. Distribution and status of the endemic riverine fishes of the Missouri River drainage in Wyoming. Joint Meeting, Colorado/Wyoming Chapter American Fisheries Society and Colorado Chapter Wildlife Society, Fort Collins, Colorado, January 21, 1994. PLATFORM
- Marwitz, T., and W. Hubert. A description of the history and status of walleye fisheries in the North Platte River drainage. Joint Meeting, Colorado/Wyoming Chapter American Fisheries Society and Colorado Chapter Wildlife Society, Fort Collins, Colorado, January 21, 1994. PLATFORM
- Alexander, C. B., and W. A. Hubert. History, genetic variation, and management uses of 13 salmonid brood stocks maintained by the Wyoming Game and Fish Department. Symposium on the Uses and Effects of Cultured Fishes in Aquatic Ecosystems, Albuquerque, New Mexico, March 17, 1994. PLATFORM
- Hubert, W. A. Teaching fisheries science within the context of ecosystem management. Education Section Symposium, Annual Meeting, American Fisheries Society, Halifax, Nova Scotia, August 25, 1994. INVITED, PLATFORM
- Chamberlain, C. B., and W. A. Hubert. Effects of environmental and community factors on rainbow trout and cutthroat trout in Wyoming lakes. Annual Meeting, American Fisheries Society, Halifax, Nova Scotia, August 25, 1994. PLATFORM
- Hubert, W. A. Influence of environmental gradients on the composition and abundance of fishes in Wyoming streams. F. O. Butler Lecture, South Dakota State University, Brookings, South Dakota, November 2, 1994. INVITED, PLATFORM
- Radicker, C., W. Hubert, and T. Wesche. Flow duration analysis as a means of defining winter flow requirements for trout streams of southeastern Wyoming. Annual Meeting, Wyoming State Section, American Water Resources Association, Laramie, Wyoming, November 3, 1994. PLATFORM
- Wiley, D. E., T. A. Wesche, and W. A. Hubert. Development and evaluation of flushing flow recommendations for the Bighorn River. Annual Meeting, Wyoming State Section, American Water Resources Association, Laramie, Wyoming, November 3, 1994. PLATFORM
- Radicker, C. A., W. A. Hubert, and T. A. Wesche. Flow duration as a means of defining winter flow requirements for trout in streams. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Casper, Wyoming, March 15, 1995. PLATFORM
- Wiley, D. E., T. A. Wesche, and W. A. Hubert. Development and evaluation of flushing flow recommendations for the Bighorn River. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Casper, Wyoming, March 15, 1995. PLATFORM
- Kruse, C. G., W. A. Hubert, and F. J. Rahel. Genetic purity, habitat, and population characteristics of Yellowstone cutthroat trout, in the Greybull River drainage,

- Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Casper, Wyoming, March 15, 1995. PLATFORM
- Marwitz, T. D., and W. A. Hubert. Walleye fisheries in the North Platte River drainage of Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Casper, Wyoming, March 16, 1995. PLATFORM
- Marwitz, T., and W. Hubert. Walleye fisheries in the North Platte River drainage of Wyoming. Annual Meeting, Western Division, American Fisheries Society, Park City, Utah, July 19, 1995. PLATFORM
- Kruse, C. G., W. A. Hubert, and F. J. Rahel. Genetic purity, habitat, and population characteristics of Yellowstone cutthroat trout in the Greybull River drainage, Wyoming. Annual Meeting, Western Division, American Fisheries Society, Park City, Utah, July 19, 1995. PLATFORM
- Kruse, C. G., W. A. Hubert, and F. J. Rahel. Genetic purity, habitat, and population characteristics of Yellowstone cutthroat trout in the Greybull River drainage, Wyoming. Annual Meeting, American Fisheries Society, Tampa, Florida, August, 28, 1995. PLATFORM
- Marwitz, T. D., and W. A. Hubert. Structural indices provide assessment tools for walleyes in western reservoirs. Annual Meeting, American Fisheries Society, Tampa, Florida, August 30, 1995. PLATFORM
- Krueger, K., and W. Hubert. Sauger in reservoirs of the Big Horn River drainage, Wyoming. Annual Workshop, Great Plains Fisheries Workers Association, Fort Collins, Colorado, February 14, 1996. PLATFORM
- Patton, T. M., C. A. Wheeler, W. A. Hubert, and F. J. Rahel. A survey of the warmwater fishes of the North and South Platte River drainage in Wyoming. Platte River Basin Ecosystem Symposium, Kearney, Nebraska, February 27, 1996. PLATFORM
- Patton, T. M., W. A. Hubert, and F. J. Rahel. Changing distributions of warmwater fishes in streams of the Missouri River drainage, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Fort Collins, Colorado, March 21, 1996. PLATFORM
- Gryska, A. D., and W. A. Hubert. Sources of variability in catch and length of Kendall Warm Springs dace using a newly designed trap. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Fort Collins, Colorado, March 21, 1996. PLATFORM
- Krueger, K. L., and W. A. Hubert. Dynamics and genetic purity of sauger in two reservoirs on the Big Horn River, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Fort Collins, Colorado, March 21, 1996. PLATFORM
- Kruse, C. G., and W. A. Hubert. Standard length-weight equation for inland cutthroat trout with application to Wyoming lakes. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Fort Collins, Colorado, March 21, 1996. PLATFORM
- Hubert, W. A. From fur trappers to the internet: fish and fishing around Laramie. Spring 1996 Laramie Lyceum, University of Wyoming, April 9, 1996. INVITED, PLATFORM

- Patton, T., F. Rahel, and W. Hubert. Status and trends of Wyoming fishes: influences of sampling efficiency and spatial scale when comparing recent and historic surveys. Annual Meeting, Western Division, American Fisheries Society, Eugene, Oregon, July 17, 1996. PLATFORM
- Simpkins, D. G., W. A. Hubert, and T. A. Wesche. Winter habitat for rainbow trout in the Big Horn River below Boysen Reservoir, Wyoming. Annual Meeting, Northcentral Division, American Fisheries Society, Omaha, Nebraska, December 12, 1996. PLATFORM
- Simpkins, D. G., W. A. Hubert, and T. A. Wesche. Winter habitat for rainbow trout in the Big Horn River below Boysen Reservoir, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 19, 1997. PLATFORM
- Mullner, S. A., W. A. Hubert, and T. A. Wesche. Assessment of collaborative watershed management approaches used in the United States with evaluation for applicability in Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 19, 1997. PLATFORM
- Kruse, C. G., W. A. Hubert, and F. J. Rahel. Geomorphic influences on the distribution of Yellowstone cutthroat trout in the Absaroka Mountains, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 19, 1997. PLATFORM
- Krueger, K. L., and W. A. Hubert. Assessment of lentic sport fisheries for burbot in the Bighorn/Wind River drainage, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 19, 1997. PLATFORM
- Patton, Y., F. J. Rahel, and W. A. Hubert. Criteria for identifying fish conservation areas: simultaneous consideration of species richness and density. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 19, 1997. PLATFORM
- Mullner, S., W. Hubert, E. Felbeck, and T. Wesche. Assessment of collaborative watershed management approaches used in the United States with evaluation for applicability in Wyoming. Wyoming Water 1997, Casper, Wyoming, April 21, 1997. INVITED, PLATFORM
- Felbeck, E., T. Wesche, S. Mullner, and W. Hubert. The North Tongue River: a collaborative approach to watershed management. Wyoming Water 1997, April 21, 1997. INVITED, PLATFORM
- Bray, T., T. Wesche, and W. Hubert. Channel Morphology and riparian mosaic along the Big Horn River downstream from Boysen Dam. Wyoming Water 1997, Casper, Wyoming, April 22, 1997. INVITED, PLATFORM
- Simpkins, D., W. Hubert, and T. Wesche. Use of radiotelemetry to define winter habitat use by rainbow trout in the Big Horn River, Wyoming. Wyoming Water 1997, Casper, Wyoming, April 22, 1997. INVITED, PLATFORM
- Wesche, T., T. Bray, and W. Hubert. Flushing flow requirements of large regulated rivers in Wyoming. Wyoming Water 1997, Casper, Wyoming, April 22, 1997. INVITED, PLATFORM

- Hubert, W., C. Pru, T. Wesche, and T. Bray. Evaluation of flow duration analysis to establish winter instream flow standards for Wyoming trout streams. Wyoming Water 1997, Casper, Wyoming, April 22, 1997. INVITED, PLATFORM
- Hubert, W. A., and E. Bergersen. Conceptual basis for habitat analysis: inventory, assessment and monitoring philosophies. Annual Meeting, American Fisheries Society, Monterey, California, August 28, 1997. INVITED, PLATFORM
- Gryska, A. D., W. A. Hubert, and K. G. Gerow. Application of a new trap and power analysis to monitor the endangered Kendall Warm Springs dace in a spring stream. Annual Meeting, American Fisheries Society, Monterey, California, August 27, 1997. PLATFORM
- Patton, T. M., F. J. Rahel, and W. A. Hubert. Criteria for identifying fish conservation areas: simultaneous consideration of species richness and density. Annual Meeting, American Fisheries Society, Monterey, California, August 28, 1997. PLATFORM
- Simpkins, D. G., W. A. Hubert, and T. A. Wesche. Winter habitat for rainbow trout in the Big Horn River below Boysen Reservoir. Annual Meeting, American Fisheries Society, Monterey, California, August 25-28, 1997. PLATFORM
- Mullner, S. A., W. A. Hubert, and T. A. Wesche. Evaluation of snorkeling as an alternative to electrofishing for estimating abundance and length frequencies of trout in small mountain streams. Annual Meeting, American Fisheries Society, Monterey, California, August 25-28, 1997. PLATFORM
- Meyer, J. S., D. F. Woodward, J. N. Goldstein, A. M. Farag, and W. A. Hubert. Relationships between boron concentrations and trout in the Firehole River, Wyoming, USA. Second International Symposium on the Health Effects of Boron and Its Compounds, University of California-Irvine, California, October 23, 1997. PLATFORM
- Felbeck, E. A., T. A. Wesche, S. A. Mullner, and W. A. Hubert. Suspended sediment sources to the North Tongue River, Wyoming. Annual Meeting, Wyoming State Section, American Water Resources Association, Laramie, Wyoming, November 13, 1997. PLATFORM
- Mullner, S. A., W. A. Hubert, E. A. Felbeck, and T. A. Wesche. Application of an approach for watershed-scale assessment of habitat and fisheries in the North Tongue River watershed, Wyoming. Annual Meeting, Wyoming State Section, American Water Resources Association, Laramie, Wyoming, November 13, 1997. PLATFORM
- Geyer, J. R., T. A. Wesche, R. N. Schmal, and W. A. Hubert. Morphologic, habitat and trout responses of a previously ephemeral stream after twelve years of flow augmentation. Annual Meeting, Wyoming State Section, American Water Resources Association, Laramie, Wyoming, November 13, 1997. PLATFORM
- Hubert, W. Problems in the management of regulated rivers. Seminar, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, February 5, 1998. INVITED, PLATFORM
- Mullner, S. A., W. A. Hubert, and T. A. Wesche. Collaborative processes used for watershed-scale fisheries management in the United States. Joint Meeting, Colorado/Wyoming and Bonneville Chapters, American Fisheries Society, Grand Junction, Colorado, March 4, 1998. PLATFORM

- Simpkins, D. G., W. A. Hubert, and T. A. Wesche. Winter feeding and energy budget of small rainbow trout in a Wyoming tailwater: energy deficit contributes to overwinter mortality. Joint Meeting, Colorado/Wyoming and Bonneville Chapters, American Fisheries Society, Grand Junction, Colorado, March 4, 1998. PLATFORM
- Hebdon, J. L., W. A. Hubert, and K. Gerow. Subsampling method for determining density of invertebrates in drift samples. Joint Meeting, Colorado/Wyoming Chapters, American Fisheries Society, Grand Junction, Colorado, March 4, 1998. PLATFORM
- Isaak, D. J., W. A. Hubert, and K. L. Krueger. Accuracy and precision of reach-scale, water surface slope measures estimated by traditional means and with a geographic information system. Joint Meeting, Colorado/Wyoming Chapters, American Fisheries Society, Grand Junction, Colorado, March 4, 1998. PLATFORM
- Mullner, S. A., W. A. Hubert, and T. A. Wesche. Comparison of estimates of trout abundance and length structure by snorkeling and estimates by depletion sampling using electrofishing for trout in mountain streams of Wyoming. Joint Meeting, Colorado/Wyoming Chapters, American Fisheries Society, Grand Junction, Colorado, March 3-4, 1998. POSTER
- Hubert, W. The ecology of trout in Wyoming's regulated rivers: does warmer than normal winter temperature cause an energetic bottleneck? Fisheries Seminar, Department of Biology, University of Arkansas, Fayetteville, Arkansas, April 16, 1998. INVITED, PLATFORM
- Hubert, W. A. Life history and ecology of channel catfish. Catfish 2000. First International Ictalurid Symposium, Davenport, Iowa, June 22, 1998. INVITED, PLATFORM
- Mullner, S. A., W. A. Hubert, and T. A. Wesche. Collaborative processes used for watershed-scale water resources management in the United States. Universities Council on Water Resources, Hood River, Oregon, August 5, 1998. INVITED, PLATFORM
- Hebdon, J. L., and W. A. Hubert. Variation in body condition of small stocked trout and food availability during winter among regulated rivers in Wyoming. Annual Meeting, Great Plains Fisheries Workers Association, February 1, 1999, Casper, Wyoming. PLATFORM
- Isaak, D. J., and W. A. Hubert. Predicting the effects of *Myxobolus cerebralis* across a fifth-order Rocky Mountain watershed. Whirling Disease Symposium, Missoula, Montana, February 19, 1999. PLATFORM
- Covington, J. S., and W. A. Hubert. Use of aerial photographs and a GIS in watershed-scale, instream-flow assessment. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 2, 1999. PLATFORM
- Dare, M. R., W. A. Hubert, and T. A. Wesche. Winter habitat segregation by sub-adults of two trout species in a regulated river--implications for management. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 2, 1999. PLATFORM
- Hebdon, J. L., and W. A. Hubert. Variation in body condition of small stocked trout and food availability during winter among regulated rivers in Wyoming. Annual

- Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 2, 1999. PLATFORM
- Isaak, D. J., and W. A. Hubert. Are trout populations affected by reach-scale stream slope? Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 2, 1999. PLATFORM
- Isaak, D. J., and W. A. Hubert. Predicting the effects of *Myxobolus cerebralis* across a fifth-order Rocky Mountain watershed. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 3, 1999. PLATFORM
- Mullner, S. A., and W. A. Hubert. Evaluation of a visual substrate size and quality estimation technique in comparison to single-probe freeze core sampling. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 3, 1999. PLATFORM
- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Variation in body condition ( $W_r$ ) of juvenile rainbow trout in relation to physiological measures of starvation and activity. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 3, 1999. PLATFORM
- Hebdon, J. L., and W. A. Hubert. Variation in body condition of small stocked trout and food availability during winter among regulated rivers in Wyoming. Annual Meeting, Idaho Chapter, American Fisheries Society, Boise, Idaho, March 10, 1999. PLATFORM
- Isaak, D. J., and W. A. Hubert. Predicting the effects of *Myxobolus cerebralis* across a fifth-order Rocky Mountain watershed. Annual Meeting, Idaho Chapter, American Fisheries Society, Boise, Idaho, March 10, 1999. PLATFORM
- Hubert, W. A. Cutthroat trout in western waters. Teton Science School's 1999 Winter Speaker Series, Jackson, Wyoming, March 18, 1999. INVITED, PLATFORM
- Hubert, W. A. Findings from the Wyoming angler's survey. Wyoming Game and Fish Commission, Casper, Wyoming, April 26, 1999. INVITED, PLATFORM
- Annear, T. C., and W. A. Hubert. Behavioral and physiological response of trout to winter habitats in Wyoming, USA. IAHS Workshop, Birmingham, England, July 1999. INVITED, PLATFORM
- Covington, J. S., and W. A. Hubert. Use of aerial photographs and a GIS in watershed-scale, instream-flow assessment. Annual Meeting, Western Division, American Fisheries Society, Moscow, Idaho, July 14, 1999. PLATFORM
- Dare, M. R., and W. A. Hubert. Precision of a new method for collecting habitat data at radio telemetry locations in streams. Annual Meeting, Western Division, American Fisheries Society, Moscow, Idaho, July 14, 1999. PLATFORM
- Isaak, D. J., and W. A. Hubert. Geomorphic influences on temperature attributes of small mountain streams. Annual Meeting, Western Division, American Fisheries Society, Moscow, Idaho, July 14, 1999. PLATFORM
- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Variation in body condition ( $W_r$ ) of juvenile rainbow trout in relation to physiological measures of starvation and activity. Annual Meeting, Western Division, American Fisheries Society, Moscow, Idaho, July 15, 1999. PLATFORM
- Bozek, M. A., and W. A. Hubert. Using the concept of habitat dimensions to generalize habitat models to predict standing stocks of salmonids in streams. Annual

- Meeting, American Fisheries Society, Charlotte, North Carolina, August 1999. PLATFORM
- Dare, M. R., W. A. Hubert, and T. A. Wesche. Winter habitat segregation by sub-adult cutthroat trout and brown trout in a regulated river--implications for management. Annual Meeting, American Fisheries Society, Charlotte, North Carolina, August 1999. PLATFORM
- Goldstein, J. N., W. A. Hubert, D. F. Woodward, A. M. Farag, and J. S. Meyer. Effects of geothermal additions on the distribution of trout in the Firehole River, Yellowstone National Park. Annual Meeting, American Fisheries Society, Charlotte, North Carolina, August 1999. PLATFORM
- Hebdon, J. L., and W. A. Hubert. Variation in body condition of small stocked trout and food availability during winter among regulated rivers in Wyoming. Annual Meeting, American Fisheries Society, Charlotte, North Carolina, August 1999. PLATFORM
- Kruse, C. G., W. A. Hubert, and F. J. Rahel. An evaluation of isolation of Yellowstone cutthroat trout in headwater streams as a management strategy in Wyoming. Annual Meeting, American Fisheries Society, Charlotte, North Carolina, August 1999. PLATFORM
- Miller, D., L. Hebdon, and W. Hubert. Trends in Wyoming angler attitudes determined using a mail survey. Annual Meeting, Northcentral Division, American Fisheries Society, Minneapolis, Minnesota, December 1999. PLATFORM
- Hubert, W. A., D. G. Simpkins, J. L. Hebdon, and M. R. Dare. Factors influencing over-winter survival of juvenile trout in Wyoming tailwaters. Symposium: Ecology and Management of Tailwaters in the United States, Lake Powell, Arizona, April 27, 2000. INVITED, PLATFORM
- Simpkins, D., W. Hubert, and C. Martinez del Rio. Effects of starvation, water temperature and secondary stressors on the health and survival of juvenile rainbow trout. Annual Meeting, Western Division, American Fisheries Society, Telluride, Colorado, July 18, 2000. PLATFORM
- Goldstein, J., W. Hubert, D. Woodward, A. Farag, and J. Meyer. Differences in embryonic temperature tolerance affect the distribution of rainbow trout and brown trout in the Firehole River, Yellowstone National Park. Annual Meeting, Western Division, American Fisheries Society, Telluride, Colorado, July 18, 2000. PLATFORM
- Dare, M., W. Hubert, and T. Wesche. Consequences of variable discharge for habitat availability and habitat use by two species of trout in a Wyoming tailwater during winter. Annual Meeting, Western Division, American Fisheries Society, Telluride, Colorado, July 19, 2000. PLATFORM
- Isaak, D., and W. Hubert. Functioning of montane landscapes to produce stream habitats: hypothesis tests on spatially explicit path analysis. Western Division, American Fisheries Society, Telluride, Colorado, July 19, 2000. INVITED, PLATFORM
- Isaak, D. J., and W. A. Hubert. The role of GIS in exploratory spatial data analysis and the development of spatially explicit regression models. Annual Meeting, American Fisheries Society, St. Louis, Missouri, August 20, 2000. PLATFORM
- Mullner, S. A., W. A. Hubert, E. A. Felbeck, and T. A. Wesche. Quantitative relations of roads and grazing to suspended sediments and salmonid spawning habitat quality

- in a fourth-order Rocky Mountain watershed. Annual Meeting, American Fisheries Society, St. Louis, Missouri, August 20, 2000. PLATFORM
- Mullner, S. A., W. A. Hubert, and T. A. Wesche. Integrating a watershed-scale inventory for describing physical habitat and trout population information using geographic information system depiction. Annual Meeting, American Fisheries Society, St. Louis, Missouri, August 21, 2000. INVITED, PLATFORM
- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Effects of starvation, winter temperature and secondary stressors on the health and survival of juvenile rainbow trout. Annual Meeting, American Fisheries Society, St. Louis, Missouri, August 21, 2000. PLATFORM
- Scott, M., T. Wesche, and W. Hubert. Riverside life below the dams: cottonwoods, flows and fish. Symposium, North Platte River Closeups, University of Wyoming Casper Center, Casper, Wyoming, October 5, 2000. INVITED, PLATFORM
- Hubert, W. A. Publishing your thesis research: Process and ethics. Seminar, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming, October 16, 2000. INVITED, PLATFORM
- Miller, D., W. Hubert, and R. Hall. Role of the university in research and management. Statewide Meeting, Fish Division, Wyoming Game and Fish Department, Riverton, Wyoming, December 13, 2000. INVITED, PLATFORM
- Hubert, W. A., M. P. Joyce, R. Gipson, D. Zafft, D. Money, D. Hawk, and B. Taro. Whirling disease among Snake River cutthroat trout in two spring streams in Wyoming. 7th Annual Whirling Disease Symposium, Salt Lake City, Utah, February 9, 2001. POSTER
- Bailey, P., and W. Hubert. Influence of accessibility y anglers on the dynamics of salmonids in high-mountain lakes. Annual Meeting, Great Plains Fisheries Workers, Sidney, Nebraska, February 2001. PLATFORM
- Simpkins, D. G., J. L. Hebdon, M. R. Dare, and W. A. Hubert. Factors influencing overwinter survival of juvenile trout in Wyoming tailwaters. Annual Meeting, Michigan Chapter, American Fisheries Society, Roscommon, Michigan, March 5, 2001. PLATFORM
- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Do body condition indices reflect physiological health of fish? Annual Meeting, Michigan Chapter, American Fisheries Society, Roscommon, Michigan, March 6, 2001. INVITED, PLATFORM
- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Do body condition indices reflect physiological health of fish? Great Lakes Fish Commission Fish Health Workshop, Ann Arbor, Michigan, March 14, 2001. INVITED, PLATFORM
- Burckhardt, J. C., W. A. Hubert, R. Gipson, D. Zafft, K. Gelwicks, D. hawk, and D. Money. The effects of habitat features on the distribution of *Myxobolus cerebralis* and occurrence of whirling disease among age-0 salmonids in the Salt River drainage, Wyoming-Idaho. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 20, 2001. PLATFORM
- Joyce, M. P., and W. A. Hubert. Determination of factors affecting natural recruitment of Snake River cutthroat trout in spring streams tributary to the Salt River. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 20, 2001. PLATFORM



- Lipsev, T. S. B., and W. A. Hubert. Predicting native fish distributions in the North Platte River drainage of Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 20, 2001. PLATFORM
- Isaak, D. J., and W. A. Hubert. Landscape views of trout populations in small mountain streams. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 21, 2001. PLATFORM
- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Do condition indices reflect physiological status of fish? Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 21, 2001. PLATFORM
- Dare, M. R., W. A. Hubert, and J. S. Meyer. The influence of discharge on hydrogen sulfide concentrations and distributions of two trout species in a regulated river. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 21, 2001. PLATFORM
- Bailey, P. E., and W. A. Hubert. Influence of accessibility by anglers on the dynamics of salmonids in high-mountain lakes. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 21, 2001. PLATFORM
- Hubert, W. A. Yellowstone cutthroat trout in northwestern Wyoming. Aquatic Habitat Section Meeting, Fish Division, Wyoming Game and Fish Department, Meeteetse, Wyoming, July 16, 2001. INVITED, PLATFORM
- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Do condition indices reflect physiological status of fish? Annual Meeting, American Fisheries Society, Phoenix, Arizona, August 23, 2001. PLATFORM
- Hubert, W. A. Fisheries research by the Cooperative Fish and Wildlife Research Unit. Fisheries Management Section, Fish Division, Wyoming Game and Fish Department, Riverton, Wyoming, November 15, 2001. INVITED, PLATFORM
- Burckhardt, J. C., W. A. Hubert, R. Gipson, D. Zafft, K. Gelwicks, D. hawk, and D. Money. The effects of habitat features on the distribution of *Myxobolus cerebralis* and occurrence of whirling disease among age-0 salmonids in the Salt River drainage, Wyoming-Idaho. 8th Annual Whirling Disease Symposium, Denver, Colorado, February 13, 2002. PLATFORM
- Schwanke, C. J., and W. A. Hubert. Abundance and movements of the rainbow trout spawning population in the Naknek River, Southwest Alaska. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Laramie, Wyoming, February 25, 2002. PLATFORM
- Smith, M. A., and W. A. Hubert. Effects of rapidly changing temperatures on short-term survival of juvenile rainbow trout. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Laramie, Wyoming, February 25, 2002. PLATFORM
- Burckhardt, J. C., W. A. Hubert, R. Gipson, D. Zafft, K. Gelwicks, D. hawk, and D. Money. The effects of habitat features on the distribution of *Myxobolus cerebralis* and occurrence of whirling disease among age-0 salmonids in the Salt River drainage, Wyoming-Idaho. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Laramie, Wyoming, February 25, 2002. PLATFORM

- Simpkins, D. G., W. A. Hubert, and C. Martinez del Rio. Factors affecting the condition and overwinter survival of juvenile rainbow trout in tailwaters: Are fish starving to death? Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Laramie, Wyoming, February 26, 2002. PLATFORM
- Hubert, W. A. Changing paradigms for fisheries management: Implications for educators and managers. Joint Meeting, Idaho and Bonneville chapters, American Fisheries Society, Pocatello, Idaho, February 28, 2002. INVITED, PLATFORM
- Burckhardt, J. C., W. A. Hubert, R. Gipson, D. Zafft, K. Gelwicks, D. hawk, and D. Money. The effects of habitat features on the distribution of *Myxobolus cerebralis* and occurrence of whirling disease among age-0 salmonids in the Salt River drainage, Wyoming-Idaho. Joint Meeting, Idaho and Bonneville chapters, American Fisheries Society, Pocatello, Idaho, February 28, 2002. PLATFORM
- Schwanke, C. J., and W. A. Hubert. Abundance and movements of the rainbow trout spawning population in the Naknek River, Southwest Alaska. Joint Meeting, Idaho and Bonneville chapters, American Fisheries Society, Pocatello, Idaho, March 1, 2002. PLATFORM
- Smith, M. A., and W. A. Hubert. Effects of rapidly changing temperatures on short-term survival of juvenile rainbow trout. Joint Meeting, Idaho and Bonneville chapters, American Fisheries Society, Pocatello, Idaho, March 1, 2002. PLATFORM
- Hubert, W. Application of resource selection functions in fisheries science. First International Conference on Resource Selection by Animals, Laramie, Wyoming, January 11, 2003. INVITED, PLATFORM
- Smith, M. A., W. A. Hubert, and F. Barrows. The effect of diet composition on growth and reproductive efficiency of Yellowstone cutthroat trout broodfish. Joint Meeting, Colorado/Wyoming and Bonneville Chapters, American Fisheries Society, Grand Junction, Colorado, March 4, 2003. PLATFORM
- Amadio, C. J., and W. A. Hubert. Distribution, habitat associations, and population dynamics of sauger in the upper Wind River watershed, Wyoming. Joint Meeting, Colorado/Wyoming and Bonneville Chapters, American Fisheries Society, Grand Junction, Colorado, March 5, 2003. PLATFORM
- Quist, M. C., W. A. Hubert, and F. J. Rahel. A process driven approach for assessing warmwater streams in Wyoming. Joint Meeting, Colorado/Wyoming and Bonneville Chapters, American Fisheries Society, Grand Junction, Colorado, March 5, 2003. PLATFORM
- Quist, M. C., W. A. Hubert, and F. J. Rahel. Effects of impoundments on physio-chemical habitat and turbid-river cyprinids in the Missouri River drainage of Wyoming. Joint Meeting, Colorado/Wyoming and Bonneville Chapters, American Fisheries Society, Grand Junction, Colorado, March 5, 2003. PLATFORM
- Simpkins, D. G., and W. A. Hubert. Factors affecting the overwinter survival of stocked rainbow trout and cutthroat trout in Wyoming tailwaters with recommendations for management and research. Joint Meeting, Colorado/Wyoming and Bonneville Chapters, American Fisheries Society, Grand Junction, Colorado, March 5, 2003. PLATFORM

- Hubert, W. A., and M. Quist. Ecosystem, social, and economic consequences of extirpations of cutthroat trout by invasive species in the Rocky Mountains: Implications for future conservation. Conference on Bioinvasions, University of Wyoming, Laramie, Wyoming, June 6, 2003. INVITED, PLATFORM
- Amadio, C. J., W. A. Hubert, D. Dufek, K. Johnson, D. Oberlie, J. Deromedi, and M. White. Habitat and dynamics of sauger in a high-elevation watershed in Wyoming. Annual Meeting, American Fisheries Society, Quebec, Canada, August 11, 2003. POSTER
- Quist, M. C., and W. A. Hubert. A process-driven approach for assessing warmwater streams in Wyoming. Annual meeting, American Fisheries Society, Quebec, Canada, August 11, 2003. PLATFORM
- Smith, M. A. and W. A. Hubert. The effect of diet composition on growth and reproductive efficiency of Yellowstone cutthroat trout broodfish. Annual Meeting, American Fisheries Society, Quebec, Canada, August 11, 2003. PLATFORM
- Quist, M. C., W. A. Hubert, and F. J. Rahel. Effects of impoundments on physio-chemical habitat and turbid-river cyprinids in the Missouri River drainage of Wyoming. Annual Meeting, American Fisheries Society, Quebec, Canada, August 14, 2003. PLATFORM
- Simpkins, D. G., and W. A. Hubert. Factors affecting the overwinter survival of stocked trout in Wyoming tailwaters with management and research recommendations. Annual Meeting, American Fisheries Society, Quebec, Canada, August 14, 2003. PLATFORM
- Quist, M. C., W. A. Hubert, and F. J. Rahel. A process-driven approach for assessing warmwater streams in Wyoming. 64<sup>th</sup> Annual Midwest Fish and Wildlife Conference, Kansas City, Kansas, December 9, 2003. PLATFORM
- Quist, M. C., F. J. Rahel, and W. A. Hubert. Hierarchical faunal filters: An approach for assessing the effects of habitat and nonnative fishes on native fishes. 64<sup>th</sup> Annual Midwest Fish and Wildlife Conference, Kansas City, Kansas, December 9, 2003. PLATFORM
- Quist, M. C., W. A. Hubert, and F. J. Rahel. Warmwater stream assessment in Wyoming: A process-driven approach. Annual Meeting, Southern Division, American Fisheries Society, Oklahoma City, Oklahoma, February, 28, 2004. INVITED, PLATFORM
- Hubert, W. A., K. R. Gelwicks, D. Zafft, and R. Gipson. Synthesis of research and management issues regarding fine-spotted cutthroat trout in the Salt River drainage, Wyoming. Annual Meeting, Western Division, American Fisheries Society, Salt Lake City, Utah, March 2, 2004. INVITED, PLATFORM
- Amadio, C. J., W. A. Hubert, D. Dufek, K. Johnson, and D. Oberlie. Sauger distribution and habitat associations in the Wind River drainage, Wyoming. Annual Meeting, Western Division, American Fisheries Society, Salt Lake City, Utah, March 3, 2004. PLATFORM
- Barrineau, C. E., W. A. Hubert, P. D. Dey, and T. C. Annear. Winter ice processes and habitat for salmonids associated with two types of instream habitat structures. Annual Meeting, Western Division, American Fisheries Society, Salt Lake City, Utah, March 3, 2004. PLATFORM

- Hubert, W. A., and K. M. Gordon. Natural and anthropogenic factors contribute to the declines of western Great Plains fishes. Annual Meeting, Western Division, American Fisheries Society, Salt Lake City, Utah, March 3, 2004. INVITED, PLATFORM
- Lindstrom, J. W., and W. A. Hubert. Fall-through-winter habitat selection and movements of adult trout in a foothills stream. Annual Meeting, Western Division, American Fisheries Society, Salt Lake City, Utah, March 3, 2004. PLATFORM
- Quist, M. C., and W. A. Hubert. Bioinvasive salmonids and the preservation of cutthroat trout: Ecological, social, and economic issues. Annual Meeting, Western Division, American Fisheries Society, Salt Lake City, Utah, March 3, 2004. PLATFORM
- Rhea, D. T., W. A. Hubert, R. S. Gangl, and R. A. Whaley. Effects of seasonal patterns of nearshore and offshore trout distributions on hydroacoustic density estimates. Annual Meeting, Western Division, American Fisheries Society, Salt Lake City, Utah, March 3, 2004. PLATFORM
- Barrineau, C. E., W. A. Hubert, P. D. Dey, and T. C. Annear. Evaluation of the design of instream habitat structures relative to winter trout habitat in a low-gradient foothills stream in Wyoming. Annual Meeting, American Fisheries Society, Madison, Wisconsin, August 23, 2004. PLATFORM
- Quist, M. C., W. A. Hubert, and F. J. Rahel. Assessing the effects of habitat and nonnative species on native fishes using hierarchical faunal filters. Annual Meeting, American Fisheries Society, Madison, Wisconsin, August 23, 2004. PLATFORM
- Lindstrom, J., and W. A. Hubert. Habitat selection and movements of adult cutthroat trout and brook trout from fall through winter in a low-gradient Rocky Mountain stream. Annual Meeting, American Fisheries Society, Madison, Wisconsin, August 25, 2004. PLATFORM
- Quist, M. C., and W. A. Hubert. Ecological, social, and economic issues related to bioinvasive species and preservation of cutthroat trout in the western United States. Wild Trout VIII Symposium, Old Faithful Lodge, Yellowstone National Park, September 21, 2004. INVITED, PLATFORM
- Bower, M. R., W. A. Hubert, and F. J. Rahel. Factors affecting conservation strategies for roundtail chub, flannelmouth sucker, and bluehead sucker in an isolated headwater watershed in Wyoming. Annual Meeting, Desert Fishes Council, Tucson, Arizona, November 12, 2004. PLATFORM
- Kuhn, K. M., and W. A. Hubert. Fall through winter movements of adult sauger in the Wind River drainage, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, March 8, 2005. PLATFORM
- Lionberger, P., and W. A. Hubert. Longitudinal variation in the small fish assemblage in the Wind River watershed, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, March 8, 2005. PLATFORM

- Beatty, R. J. F. J. Rahel, and W. A. Hubert. Catostomid spawning migrations and late-summer fish assemblages in Muddy Cree, an intermittent watershed in Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, March 9, 2005. PLATFORM
- Quist, M. C., W. A. Hubert, and F. J. Rahel. Hierarchical faunal filters: An approach for assessing the effects of habitat and nonnative species on native fishes. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, March 8, 2005. PLATFORM
- Quist, M. C., M. R. Bower, and W. A. Hubert. Summer food habits and trophic overlap of roundtail chub and creek chub. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries, Ft. Collins, Colorado, March 9, 2005. POSTER
- Quist, M. C., K. G. Gerow, M. R. Bower, and W. A. Hubert. Sample size requirements for monitoring fishes in Muddy Creek, Upper Colorado River basin. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, March 9, 2005. PLATFORM
- Gerow, K., R. Anderson, and W. A. Hubert. A new method to compute standard weight equations that reduces length-related bias. Annual Meeting, American Fisheries Society, Anchorage, Alaska, September 12, 2005. PLATFORM
- Quist, M. C., M. R. Bower, and W. A. Hubert. Summer food habits and trophic overlap of roundtail chub and creek chub. Annual Meeting, American Fisheries Society, Anchorage, Alaska, September 12, 2005. POSTER
- Hubert, W. A., D. Dufek, J. Deromedi, K. Johnson, S. Roth, and D. Skates. Burbot in the Wind River drainage of Wyoming. Annual Meeting, American Fisheries Society, Anchorage, Alaska, September 13, 2005. INVITED, PLATFORM
- Quist, M. C., and W. A. Hubert. Management issues associated with plains streams in Wyoming: Past, present, and future. Annual Meeting, American Fisheries Society, Anchorage, Alaska, September 14, 2005. INVITED, PLATFORM
- Bonar, S. A., D. W. Willis, and W. A. Hubert. Standard sampling methods for North American freshwater fishes. Annual Meeting, American Fisheries Society, Anchorage, Alaska, September 16, 2005. PLATFORM
- Compton, R. I., W. Hubert, F. Rahel, M. Quist, and M. Bower. Influence of human-made instream structures on the management and conservation of three native Colorado River basin fishes in the Muddy Creek watershed, Wyoming. 27th Annual Recovery Program Researchers Meeting, Recovery Implementation Program for Endangered Fish Species in the Upper Colorado and San Juan River Basins, Moab, Utah, January 18, 2006. PLATFORM
- McDonald, D. B., M. Bower, W. Hubert, and F. Rahel. Genetic bridges between introduced and native suckers in Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 7, 2006. PLATFORM
- Compton, R. I., W. Hubert, F. Rahel, M. Quist, and M. Bower. Influence of human-made instream structures on the management and conservation of three native Colorado River basin fishes in the Muddy Creek watershed, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 7, 2006. PLATFORM

- Wilhite, J., W. Hubert, and M. Smith. Spatial distributions and habitat associations of warmwater fishes in the Big Horn River, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 8, 2006. PLATFORM
- Kuhn, K. M., W. A. Hubert, K. Johnson, D. Oberlie, and D. Dufek. Seasonal movements and habitat use of adult saugers in the Little Wind River drainage, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 8, 2006. PLATFORM
- Lionberger, P. S., W. A. Hubert, and R. Hannigan. Evidence of sauger movements from a reservoir nursery to a riverine habitat as adults based on otolith chemistry. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 8, 2006. PLATFORM
- Gerow, K., R. Anderson-Sprecher, and W. A. Hubert. A new method to compute standard weight equations that reduces length-related bias. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 8, 2006. PLATFORM
- Sanderson, T. B., and W. A. Hubert. Assessment of gaseous CO<sub>2</sub> and Aqui-S as anesthetics for use when surgically implanting radio transmitters in trout. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 8, 2006. PLATFORM
- Lionberger, P. S., and W. A. Hubert. Longitudinal variation in small fish assemblages through the Wind River watershed and into Boysen Reservoir, Wyoming. Annual Meeting, Colorado/Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 7-8, 2006. POSTER
- Lionberger, P. S., and W. A. Hubert. Longitudinal variation in small fish assemblages through the Wind River watershed and into Boysen Reservoir, Wyoming. Annual Meeting, Western Division, American Fisheries, Bozeman, Montana, May 17, 2006. POSTER
- Compton, R. I., W. Hubert, F. Rahel, M. Quist, and M. Bower. Influence of human-made instream structures on the management and conservation of three native Colorado River basin fishes in the Muddy Creek watershed, Wyoming. Annual Meeting, Western Division, American Fisheries Society, Bozeman, Montana, May 18, 2006. PLATFORM
- Wilhite, J., W. Hubert, and M. Smith. Spatial distributions and habitat associations of warmwater fishes in the Big Horn River, Wyoming. Annual Meeting, Western Division, American Fisheries Society, Bozeman, Montana, May 18, 2006. PLATFORM
- Lionberger, P., and W. Hubert. Evidence of sauger movements from a reservoir nursery to riverine habitat as adults based on otolith chemistry. Annual Meeting, American Fisheries Society, Lake Placid, New York, September 11, 2006. POSTER
- Kuhn, K., and W. Hubert. Seasonal movements and habitat use by adult saugers in the Little Wind River drainage, Wyoming. Annual Meeting, American Fisheries Society, Lake Placid, New York, September 11, 2006. POSTER

- Compton, R., W. Hubert, M. Quist, and M. Bower. Influence of instream structures on the management and conservation of native fishes in the Muddy Creek watershed, Wyoming. Annual Meeting, American Fisheries Society, Lake Placid, New York, September 11, 2006. POSTER
- Compton, R. I., W. A. Hubert, F. J. Rahel, M. C. Quist, and M. R. bower. Population fragmentation affects native fishes in a Colorado River basin headwater stream system, Wyoming. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, February 28, 2007. PLATFORM
- Sanderson, T., and W. A. Hubert. Habitat diversity and access to tributaries are important to adult Snake River cutthroat trout residing in the Salt River, Wyoming. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, February 28, 2007. PLATFORM
- Sweet, D., and W. Hubert. Age, growth, and length structure of native and introduced catostomids in the Big Sandy and Little Sandy rivers, Wyoming. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, February 28, 2007. PLATFORM
- Wilhite, J. W., W. A. Hubert, and E. J. Rodemaker. Channel changes in the Bighorn River of Wyoming since regulation by Boysen Dam: implications for native fishes. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Ft. Collins, Colorado, February 28, 2007. PLATFORM
- Compton, R., W. Hubert, F. Rahel, M. Quist, and M. Bower. Riverscape fragmentation affects native fishes in a Colorado River basin headwater stream system, Wyoming. Annual Meeting, American Fisheries Society, San Francisco, California, September 4, 2007. POSTER
- Sweet, D., and W. Hubert. Age, growth, and length structure of native and introduced catostomids in two Colorado River headwater streams, Wyoming. Annual Meeting, American Fisheries Society, San Francisco, California, September 4, 2007. POSTER
- Banks, D., and W. Hubert. Population estimates of native and introduced catostomid species and their hybrids in an isolated headwater tributary to the Green River in Wyoming. 29th Annual Recover Program Researchers Meeting, Upper Colorado River Endangered Fish Recovery Program and San Juan River Basin Recovery Implementation Program, Moab, Utah, January 16, 2008. PLATFORM
- Hubert, W. A., R. I. Compton, M. R. Bower, M. C. Quist, F. R. Rahel, D. B. McDonald, and T. L. Parchman. A summary of 2002-2007 research on bluehead suckers, flannelmouth suckers, and roundtail chubs in upper Muddy Creek, Carbon County, Wyoming. 29th annual Recovery Program Researchers Meeting, Upper Colorado River Endangered Fish Recovery Program and the San Juan River Recovery Implementation Program, Moab, Utah, January 16, 2008. PLATFORM
- Sweet, D., and W. Hubert. Movements and habitat associations of native and introduced catostomids in a tributary system of the Colorado River: implications for restoration of natives. 29th annual Recovery Program Researchers Meeting, Upper Colorado River Endangered Fish Recovery Program and the San Juan River Recovery Implementation Program, Moab, Utah, January 16, 2008. PLATFORM

- Abrahamse, M., W. Hubert, and J. Deromedi. Assessment of relative abundance and structure of burbot populations among lakes and reservoirs of the Wind River drainage, Wyoming using standard sampling methods. Annual Meeting, Great Plains Fisheries Workers Association, Sheridan, Wyoming, January 30, 2008. PLATFORM
- Hubert, W. A. Fisheries research on the Great Plains of Wyoming: a 25-year history of research by the Wyoming Cooperative Fish and Wildlife Research Unit. Annual Meeting, Great Plains Fishery Workers Association, Sheridan, Wyoming, January 28, 2008. PLATFORM
- Senecal, A. C., and W. A. Hubert. Variation in physical habitat features and small fish assemblages during summer months in the Powder River, Wyoming: preliminary findings. Annual Meeting, Great Plains Fishery Workers Association, Sheridan, Wyoming, January 28, 2008. PLATFORM
- Abrahamse, M., W. Hubert, and J. Deromedi. Relative abundance and structure of burbot populations among lakes and reservoirs of the Wind River drainage, Wyoming using standard sampling methods. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 4, 2008. PLATFORM
- Banks, D., and W. Hubert. Population estimates of native and introduced catostomid species and their hybrids in an isolated headwater tributary to the Green River in Wyoming. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 4, 2008. PLATFORM
- Cook, N., F. Rahel, and W. Hubert. Status of anthropogenically-isolated populations of Colorado River cutthroat trout in the upper North Fork Little Snake River drainage. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 4, 2008. PLATFORM
- Sweet, D., and W. Hubert. Movements and habitat associations of native and introduced catostomids in a tributary system of the Colorado River: implications for restoration of the natives. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, Cheyenne, Wyoming, March 4, 2008. PLATFORM
- Bonar, S., W. Hubert, and D. Willis. Standard methods for sampling North American freshwater fishes. Annual Meeting, Western Division, American Fisheries Society, Portland, Oregon, May 5, 2008. PLATFORM
- Banks, D., and W. Hubert. Population estimates of native and introduced catostomid species and their hybrids in an isolated headwater tributary to the Green River in Wyoming. Annual Meeting, Western Division, American Fisheries Society, Portland, Oregon, May 6, 2008. PLATFORM
- Compton, R., W. Hubert, F. Rahel, M. Quist, and M. Bower. Examining population fragmentation among native Colorado River basin fishes with the aid of PIT tag technology. Annual Meeting, Western Division, American Fisheries Society, Portland, Oregon, May 6, 2008. PLATFORM
- Sweet, D., and W. Hubert. Movements and habitat associations of native and introduced catostomids in a tributary system of the Colorado River: implications for restoration of the natives. Annual Meeting, Western Division, American Fisheries Society, Portland, Oregon, May 7, 2008. PLATFORM



- Hubert, W. A. Information gaps regarding aquatic resources and oil and gas development in the West. Responsible Energy Development Symposium, Jackson Lake Lodge, Grand Teton National Park, Wyoming, May 22, 2008. INVITED, PLATFORM
- Sweet, D., W. Hubert, and M. McKinstry. Identifying management actions for native and introduced catostomids (suckers) in a tributary system of the Colorado River. National Cooperative Ecosystems Studies Unit Meeting, American Association for the Advancement of Sciences, Washington, D.C., June 18-19, 2008. INVITED, POSTER
- Bailey, P., N. Lester, and W. Hubert. Sampling coldwater fish in small standing waters of North America. Annual Meeting, American Fisheries Society, Ottawa, Canada, August 19, 2008. INVITED, PLATFORM and POSTER
- Bonar, S., W. Hubert, and D. Willis. Standard methods for sampling North American freshwater fishes. Annual Meeting, American Fisheries Society, Ottawa, Canada, August 19, 2008. INVITED, PLATFORM and POSTER
- Sweet, D., and W. Hubert. Movements and habitat associations of native and introduced catostomids in a tributary system of the Colorado River: implications for restoration of the natives. Annual Meeting, American Fisheries Society, Ottawa, Canada, August 19, 2008. POSTER
- Abrahamse, M., and W. Hubert. Trammel nets for the assessment of burbot stocks in lentic systems: do they provide a reasonable tool? Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, February 25, 2009. PLATFORM
- Hubert, W., R. Compton, D. Banks, and D. Sweet. Management problems to be confronted in preservation of bluehead suckers and flannelmouth suckers in small, headwater streams in Wyoming. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, February 25, 2009. PLATFORM
- Senecal, A. C., and W. A. Hubert. How pristine is the fish community of the Powder River, the "last remnant" of the Great Plains river system? Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, February 26, 2009. PLATFORM
- Laske, S., F. Rahel, and W. Hubert. Habitat use of roundtail chub and interactions with lake trout in two glacial lakes near Pinedale, Wyoming. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, February 26, 2009. PLATFORM
- Cook, N., W. Hubert, and F. Rahel. Status of anthropogenically-isolated populations of Colorado River cutthroat trout in the upper North Fork Little Snake River drainage. Annual Meeting, Colorado-Wyoming Chapter, American Fisheries Society, February 26, 2009. PLATFORM
- Abrahamse, M., and W. Hubert. Trammel nets for the assessment of burbot stocks in lentic systems: do they provide a reasonable tool? Annual Meeting, Western Division, American Fisheries Society, Albuquerque, New Mexico, May 5, 2009. PLATFORM
- Hubert, W., D. Banks, R. Compton, and D. Sweet. Management problems to be confronted in preservation of bluehead suckers and flannelmouth suckers in small, headwater streams in Wyoming. Annual Meeting, Western Division, American Fisheries Society, Albuquerque, New Mexico, May 6, 2009. PLATFORM

- Senecal, A., and W. Hubert. Modeling habitat availability in a Great Plains river system to assess the effects of energy development-related flow augmentation. Annual Meeting, Western Division, American Fisheries Society, Albuquerque, New Mexico, May 6, 2009. PLATFORM
- Bonar, S., W. Hubert, and D. Willis. Standard methods for sampling North American freshwater fishes. Annual Meeting, Western Division, American Fisheries Society, Albuquerque, New Mexico, May 4-6, 2009. POSTER
- Laske, S., F. Rahel, and W. Hubert. Habitat use and overlap of roundtail chub and lake trout in two glacial lakes, Wyoming. Annual Meeting, Western Division, American Fisheries Society, Albuquerque, New Mexico, May 5, 2009. POSTER
- Hubert, W. A. Evolution of inland fisheries management in the United States with perspectives on future trends in management and education. Annual Meeting, Montana Chapter, American Fisheries Society, Chico Hot Springs, Montana, March 5, 2014. PLATFORM
- Hubert, W. A. Evolution of inland fisheries management in the United States with perspectives on future trends in management and education. Seminar, Department of Zoology and Physiology, University of Wyoming, Laramie, April 28, 2014.

## EXAMPLES OF CONSULTING SERVICES

- Technical review of internal documents, data analysis, report writing. Endangered species restoration on private lands in New Mexico and Montana. Turner Enterprises, 1123 Research Drive, Bozeman, MT 59718. 2010-2017.
- Technical review of *Comparative Performance of Acoustic-Tagged and Passive Integrated Transponder-Tagged Juvenile Salmon in the Columbia and Snake Rivers, 2008*. Draft Report. Stock Control Section, U. S. Army Corps of Engineers, Portland District, 8010 NW Saint Helens, Portland, Oregon 97210-3699. 2011.
- Trained personnel in R1/R4 (Northern/Intermountain Regions) Fish and Fish Habitat Standard Inventory Procedures and assisted in stream survey to assure QA/QC. Hayden-Wing Associates Consulting, 2308 South 8<sup>th</sup> Street, Laramie, WY 82070. 2011.
- Independent external peer review of *Intake Diversion Dam Modification Lower Yellowstone Project, Montana*. Draft Supplement to the 2010 Final Environmental Assessment. Subcontractor to Battelle Memorial Institute, 505 King Avenue, Columbus, OH 43201-2696. For U.S. Army Corps of Engineers, Omaha District, Omaha, Nebraska. 2013.
- Technical review of *Attributes of the CPUE data used to monitor the Rio Grande Silvery Minnow in the Middle Rio Grande*. Draft Report. SWCA Environmental Consulting, 5647 Jefferson Street, NE, Albuquerque, NM 87109. 2013.

Independent external peer review of *Intake Diversion Dam Modification Lower Yellowstone Project, Montana*. Revised Draft Supplement to the 2010 Final Environmental Assessment. Subcontractor to Battelle Memorial Institute, 505 King Avenue, Columbus, OH 43201-2696. For U.S. Army Corps of Engineers, Omaha District, Omaha, Nebraska. 2016.

Peer reviewer. San Juan River Recovery Implementation Program. U.S. Bureau of Reclamation, Salt Lake City, UT and U.S. Fish and Wildlife Service, Albuquerque, NM. 2014-present.

Member, Independent Scientists Review Panel, Northwest Power and Conservation Council, Portland, OR. 2014-present.