RISK ASSESSMENT WORKSHEETS

Referenced in the Aquatic Animal Health Policy (713 FW 5) are two risk assessment worksheets. The first (Worksheet 1, FWS Form 3-2261) is to be used for the movements of a Captive Propagation Plan (CPP) species onto a Service (or other) facility. The second (Worksheet 2, FWS Form 3-2262) is to be used for the movement of a CPP species from the Service (or other) facility back to the environment.

1. General Instructions
    a. Refer to the Risk Assessment Worksheets 1 (FWS Form 3-2261) and 2 (FWS Form 3-2262).
    b. Each worksheet comprises a series of factors (i.e., risk factors), which are understood to either increase or decrease the risk (from an animal health perspective) of moving the subject CPP species onto or from a Service (or other) facility.
    c. Each risk factor includes a set of responses (answers), for which the Service Fish Health Center Director (FHCD) will pick only one response per factor as being applicable to that particular CCP species movement.
    d. Some risk factors include several subfactors, each of which in turn has a set of responses.
    e. In the case of risk factors with subfactors, the FHCD will respond to <u>only</u> <u>one</u> of the subfactors, that which is most applicable.
    f. Each risk factor has been assigned a factor weight (noted in bold italics, in parentheses after the factor). Such factors as CPP lifestage, facility disease history, and isolation rearing unit characteristics have been weighted higher than other factors.
    g. Each response for a risk factor or subfactor has been assigned a response value (noted in italics in parentheses after the response) and in most cases the responses within a risk factor or subfactor are assigned different response values relative to their potential health risk to the CPP species' movement.
    h. The FHCD will complete the <u>entire</u> worksheet, responding to <u>all</u> risk factors, and by so doing; generate a cumulative health risk score to be assigned to that particular CPP movement.
    i. A cumulative health risk score is generated for each worksheet used. The health risk score is determined by:
        i. Multiplying, for each risk factor, the selected response value by the factor weight. This is repeated for each and every risk factor on the worksheet.
        ii. Multiplying, for those risk factors with subfactors and only for the selected subfactor, the response value by the risk factor weight.
        iii. Adding together the previously calculated values for all risk factors on the worksheet.
        iv. Cumulative Risk Scores are then used to assign a Risk Classification to the subject CPP species' movement, and to make recommendations for minimal animal rearing

requirements relative to the assigned Risk Classification (refer Exhibit 1 in 713 FW 5).

2. Movements of CPP species from Service (or other) Facilities - special considerations.

   a. While the risk assessment for reintroduction of the CPP population is primarily done for the fish health report, it is recommended that the FHCD fill out the appropriate worksheet (Worksheet 1, FWS Form 3-2261) prior to the arrival of the animals at the Service (or other) facility, in order to identify data and management needs for the Fish Health Management Plan.

   b. The cumulative risk scores generated from Worksheet 2 (FWS Form 3-2262 are case specific and qualitative. Scores exceeding approximately 130 should indicate cases of special concern. Additionally, completed worksheets can be used to identify potential risk mitigation factors.

3. Example of CPP Species' Movements and Associated Risk Assessment Worksheets.

   a. The following three hypothetical scenarios are provided to demonstrate how the FHCD would complete a risk assessment worksheet.

   b. The examples do not include the entire worksheet, but instead a condensed version only depicting the risk factors/subfactors and the selected responses.

   c. Two scenarios, and their associated worksheets, are provided for movements of a CPP species onto a Service (or other) facility.

   d. One scenario, and its associated worksheet, is provided for the movement of a CPP species from a Service (or other) facility.

Example 1. Wild trout adults are captured and spawned in the resident stream. Iodophor-treated eggs are sent to the Timbuktu NFH's isolation building (Level B, well water, no effluent disinfection; see 713 FW 5.6.F for definitions). The hatchery is not in the same watershed as the resident stream. There is no disease history for the trout population. However, Timbuktu NFH has had an *Aeromonas salmonicida* problem for the last 3 years.

WORKSHEET 1 (FWS Form 3-2261) - Considerations or Factors Relative to Movements into a Facility			
Question	**Response**	**Weight x Response**	**Risk Score**
Animal	Traditional species	1 X 5	5
Lifestage	Gametes...with no parental history	10 X 5	50
Receiving Facility Location	Outside watershed	5 X 5	25
Pathogen Surveillance of proposed feral population	No history	10 X 5	50
Facility Disease History	High level of history - significant pathogen	10 X 5	50
Facility Health Capabilities	High - staff is knowledgeable	1 X 1	1
Facility Type	Level B	10 X 2	20
Water Source	Closed well	5 X 1	5
Cultural Impacts on Animal Health (knowledge of CPP)	Optimal	5 X 1	5
Cultural Impacts on Animal Health (facility rating)	Optimal	10 X 1	10
Health Risk Score			**221**
Risk Classification			**Moderate[1]**

Footnote 1: Definitive Risk Classification scheme has not yet been establish. Term used on this sheet is for example purposes only.

Example 2. A non-Service cooperator has proposed to capture larval big lipped crayfish and rear them in a pond adjacent to their home stream. No one has attempted this type of aquaculture with this endangered species.

WORKSHEET 1(FWS Form 3-2261) - Considerations or Factors Relative to Movements into a Facility

Question	Response	Weight X Response	Risk Score
Animal	Nontraditional species	5 X 5	25
Lifestage	Animal	10 X 5	50
Receiving Facility Location	Within watershed	5 X 2	10
Pathogen Surveillance of proposed feral population	No history	10 X 5	50
Facility Disease History	None	10 X 5	50
Facility Health Capabilities	Low - staff is inexperienced	5 X 1	5
Facility Type	Extensive	10 X 7	70
Water Source	Open with animals	5 X 5	25
Cultural Impacts on Animal Health (knowledge of CPP)	Unknown	5 X 5	25
Cultural Impacts on Animal Health (facility rating)	Unknown	10 X 5	50
Health Risk Score			**360**
Risk Classification			**High[1]**

Footnote 1: Definitive Risk Classification scheme has not yet been establish. Term used on this sheet is for example purposes only.

Example 3. The Transylvania Fish Technology Center (TFTC) has successfully reared purple sturgeon for 5 years in a well water facility within tanks. The TFTC is located outside of the sturgeon's natural range. Effluent from the facility is discharged into a city sewer system and carcasses go to the local landfill. During the 5 year rearing period, no significant pathogens have been detected in the captive population, based on three inspections performed as outlined in the Service's *Handbook*. It is proposed that uninspected, 1month old juveniles be released back into the home stream.

WORKSHEET 2 (FWS Form 3-2262) - Considerations or Factors Relative to Movements from Facility

Question	Response	Weight X Response	Risk Score
Confidence of pathogen surveillance methods	Standard methods	5 X 1	5
Confidence of pathogen surveillance efforts	Standard inspections	5 X 1	5
Lifestage released	Animal	10 X 5	50
Pathogen surveillance	High level - no pathogens	10 X 1	10
Receiving Watershed	Same as population; different from facility	5 X 3	15
Health Risk Score			**85**
Risk Classification[1]			**Moderate[1]**

Footnote 1: Definitive Risk Classification scheme has not yet been establish. Term used on this sheet is for example purposes only.

WORKSHEET 1 (FWS Form 3-2261) -Considerations or Factors Relative to Movements into a Facility		
Animal ***(5)***		
Traditional aquaculture species *(1)*		
Non-traditional species *(5)*		
Lifestage ***(10)***		
Gametes/fertilized eggs with parental history of no significant pathogens *(1)*		
Gametes/fertilized eggs with parental history of significant pathogens *(5)*		
Gametes/fertilized eggs with no parental history *(5)*		
Animal *(5)*		
Receiving Facility Location ***(5)***		
Within propagated population's watershed *(2)*		
Outside of propagated population's watershed *(5)*		
Pathogen Surveillance of Proposed Propagated Feral Population or related populations in same watershed ***(10)***		
High level of population pathogen history (multiple, statistically valid, & lethal samples)		
Significant pathogen(s) of concern detected *(5)*		
No significant pathogens detected *(1)*		
Low level of population pathogen history (single and/or non-standard samples)		
Significant pathogen(s) of concern detected *(5)*		
No significant pathogens detected *(3)*		
No population pathogen history *(5)*		
Facility Disease History ***(10)***		
High level of facility pathogen history (multiple, statistically valid, & lethal samples)		
Significant pathogen(s) of concern detected *(5)*		
No significant pathogens detected *(1)*		
Low level of facility pathogen history (single and/or non-standard samples)		
Significant pathogen(s) of concern detected *(5)*		
No significant pathogens detected *(3)*		
No facility pathogen history *(5)*		
Facility Health Capabilities (diagnostics and sampling) ***(1)***		
High (diagnostic and sampling capabilities) *(1)*		
Medium (sampling capabilities) *(3)*		
Low (require on_site FHC assistance) *(5)*		
Facility Type ***(10)***		
Isolation A/Quarantine (as defined in 713 FW 1 and 5) *(1)*		
Isolation B (as defined in 713 FW 1 and 5) *(2)*		
Isolation C (as defined in 713 FW 1 and 5) *(3)*		
Intensive (high environmental control) *(5)*		
Extensive (low environmental control) *(7)*		
Water Source ***(5)***		
Closed (protected or enclosed well or spring) *(1)*		
Open; animal free or treated/disinfected *(2)*		
Open, with any animals (non_treated or non_disinfected) *(5)*		
Cultural Impacts on Animal Health (knowledge of requirements for species) ***(5)***		
Optimal (understand cultural requirements) *(1)*		
Adequate (incomplete cultural requirements understood) *(3)*		
Unknown (automatically pick "unknown" under facilities) *(5)*		
Cultural Impacts on Animal Health (facilities) ***(10)***		
Optimal (minimal stress for growth, reproduction, or etc.) *(1)*		
Adequate (for maintenance, potential health problems) *(3)*		
Inadequate (high probability of significant mortalities) *(5)*		
Unknown (due to "unknown" cultural requirements) *(5)*		
Total Risk Score		

WORKSHEET 2 (FWS Form 3-2262) -Considerations or Factors Relative to Movements from a Facility		
Confidence of pathogen surveillance - Methods ***(5)***		
Standard methods (includes lethal) as per Section A of the *Handbook (1)*		
Non-traditional methods (e.g., NWFHS Section C from the *Handbook*) *(3)*		
No surveillance conducted *(7)*		
Confidence of pathogen surveillance - Efforts ***(5)***		
No surveillance conducted *(5)*		
Standard inspection (includes lethal) to include examination of representative sample of moribund animals *(1)*		
Examination of non-representative sample of animals *(4)*		
Lifestage Released ***(5)***		
Gametes/fertilized eggs with parental history of no significant pathogens *(1)*		
Gametes/fertilized eggs with parental history of significant pathogens *(5)*		
Gametes/fertilized eggs with no parental history *(5)*		
Animal *(5)*		
Pathogen Surveillance of Proposed Propagated Population ***(10)***		
High level of population pathogen history (multiple, statistically valid, & lethal samples)		
Significant pathogen(s) detected in population and not known in receiving watershed *(5)*		
Significant pathogen(s) detected in population and present in receiving watershed *(3)*		
No significant pathogens detected *(1)*		
Low level of population pathogen history (single and/or non-standard samples)		
Significant pathogen(s) detected in population and not known in receiving watershed *(5)*		
Significant pathogen(s) detected in population and present in receiving watershed *(3)*		
No significant pathogens detected *(3)*		
No population pathogen history *(5)*		
Receiving Watershed ***(20)***		
Same as propagated population's original watershed and facility's watershed *(1)*		
Same as population's original watershed, not facility's watershed and closed water supply *(1)*		
Same as population's original watershed, not facility's watershed and open water supply *(3)*		
Different from population's original watershed and same as facility's *(3)*		
Different from propagated population's original watershed & different from facility's watershed *(5)*		
Total Risk Score		