



C. Operational Guidelines

OVERVIEW

The Hatchery Scientific Review Group's Operational Guidelines are intended to describe operational practices that are most likely to meet conditions for success, as defined in the *Scientific Framework for the Artificial Propagation of Salmon and Steelhead*. They were developed primarily for use by the Hatchery Scientific Review Group (HSRG) in its regional hatchery reviews, but can also be useful in future reviews of these and other programs. The guidelines were then turned into a series of questions for each operational phase that can be asked about every hatchery program. A positive response to a question implies consistency with the conditions for success from the scientific framework. A negative response to a question identifies a potential risk to meeting the conditions for success.

Since objectives, as well as habitat and stock status, vary among hatchery programs, conditions for success may also vary among programs. No program is expected to meet all guidelines described in this document. Hatcheries are by their very nature a compromise, where risks must be balanced against benefits. For example, to meet survival objectives, some genetic or ecological risks may be acceptable. To meet objectives for proper ecological function, certain risks to fish health goals may be acceptable. The purpose of these guidelines is to assure that potential risks and benefits are clearly identified and managed.



BROODSTOCK CHOICE

Framework Section	Operational Guidelines for Choice of Broodstock		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
3.1, 4.2, 5.1	Does the broodstock chosen represent natural populations native or adapted to the watersheds in which hatchery fish will be released?	The broodstock chosen should represent the natural populations native or adapted to the watersheds in which hatchery fish will be released.	B	B - SH
3.1, 4.2, 5.1	Have eggs or adults been introduced from outside the watershed since the inception of the hatchery program?	Program should avoid the use of stocks from outside the watershed.	B	B
5.2	Does the broodstock chosen minimize negative ecological interactions?	A broodstock should be chosen that will minimize negative ecological interactions.	S	H
4.2	Does the broodstock chosen have a history of no pathogens?	The broodstock chosen should have a history of no pathogens.	S	H
4.4.1	Does the broodstock chosen or developed have the desired life history traits to meet harvest goals?	The broodstock chosen or developed should have the desired life history traits to meet harvest goals.	S	H



BROODSTOCK COLLECTION

Framework Section	Operational Guidelines for Collection of Broodstock		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
3.1, 4.1	Are adults randomly selected among all returning adults?	Broodstock should be selected at random from all returning adults.	B	B
3.1, 4.1	Are representative samples of donor and hatchery populations collected with respect to size, age, sex ratio, run and spawn timing, and other traits important to long-term fitness?	Representative samples of donor and hatchery populations should be collected with respect to size, age, sex ratio, run and spawn timing, and other traits important to long-term fitness.	B	B - SH
4.1, 5.1	Were sufficient numbers of donors collected from the natural stock to minimize founder effects when the program was initiated?	When initiating a hatchery program, sufficient numbers of donors should be collected from the natural stock to minimize founder effects.	B	B - SH
3.2, 4.1	Are sufficient broodstock collected to maintain an effective population size of 1000 fish per generation?	Sufficient broodstock should be collected to maintain an effective population size of 1000 fish per generation.	B	B
3.1, 4.1, 5.1	Is the composition of hatchery and wild fish in the broodstock known and controlled?	The composition of the broodstock should be monitored and controlled.	I	B
3.1, 4.1	If goal is to minimize genetic divergence, is 10 - 20% of the broodstock derived from wild fish each year?	If goal is to minimize genetic divergence, 10-20% of the broodstock should be derived from wild fish each year.	I	B
3.2	Is the necessary security of the stocks maintained?	Necessary security of the stocks should be maintained.	B	B
3.2	If the wild population has 150 fish or more, is collection of wild broodstock limited to 30% of the population?	If the wild population has 150 fish or more, limit collection of wild broodstock to 30% of the population.	I	C
3.2, 4.1	Does prespawning mortality exceed 10%?	Prespawning mortality should not exceed 10%.	B	B
3.1, 4.1, 4.2.4	Does the program avoid stock transfers and subsequent releases of eggs or fish from outside the watershed?	Program should avoid stock transfers and subsequent releases of eggs or fish from outside the watershed.	B	B
3.1, 4.1, 5.1	Do you have guidelines for acceptable contribution of hatchery origin fish to natural spawning?	Hatchery programs should adopt explicit guidelines for acceptable contribution of hatchery fish to all potentially affected natural spawning populations.	B	B
3.1, 4.1, 5.1	Is the proportion of naturally spawning fish that are of hatchery origin known?	The annual contribution of hatchery fish to natural spawning should be directly or indirectly estimated.		
3.1, 4.1, 5.1	Are guidelines for hatchery contribution to natural spawning met for all affected naturally spawning populations?	Guidelines for hatchery contribution to natural spawning should be met.	B	B

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Framework Section	Operational Guidelines for Collection of Broodstock (Cont'd.)		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
3.1, 4.1	Is the duration of the program clearly defined?	The duration of the program should be clearly defined.	I	C
4.2	Is the broodstock maintained on natural water temperature profiles to provide optimum maturation and gamete development?	The broodstock should be maintained on natural water temperature profiles to provide optimum maturation and gamete development.	B	B - SH
2.1, 2.1, 5.2	Does the number of broodstock collected maintain program size within carrying capacity of the natural environment?	The number of broodstock collected should maintain program size within carrying capacity of the natural environment.	B	B
2.3, 5.2	Are adult fish or carcasses provided for upstream planting?	Consideration should be given to provide adult fish or carcasses for upstream planting.	B	B
4.2.4	If broodstock choice is from another drainage, are eggs preferentially transferred? Are fish or eggs held in quarantine as described in the Salmonid Disease Control Policy of the Fisheries Co-Managers of Washington State (disease control policy).	If broodstock choice is from another drainage, are eggs should be preferentially transferred. Fish or eggs should be held in quarantine as described in the Salmonid Disease Control Policy of the Fisheries Co-Managers of Washington State (disease control policy).	B	B
4.2.4	Are broodstock maintained on pathogen-free and/or fish-free water supply?	Broodstock should be maintained on pathogen-free and/or fish-free water supply.	B	B
4.2.4	Does attending fish pathologist monitor and recommend treatments to maximize survival as needed?	Attending fish pathologist should monitor and recommend treatments to maximize survival as needed.	B	B
5.2	Are pre-spawning mortalities disposed of in a manner that prevents pathogen transmission to the receiving watershed?	Pre-spawning mortalities should be disposed of in a manner that prevents pathogen transmission to the receiving watershed.	B	B



SPAWNING

Framework Section	Operational Guidelines for Spawning		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
3.1, 4.1	Are males and females available for spawning on a given day randomly mated?	Males and females available for spawning on a given day should be randomly mated.	B	B - SH
3.1, 3.2, 4.1	Do fish selected for broodstock have an equal opportunity to make a genetic contribution to the progeny gene pool?	Fish selected for broodstock should have an equal opportunity to make a genetic contribution to the progeny gene pool.	B	B - SH
4.2.4	Is pathogen sampling at spawning sufficient to provide quantitative and qualitative information for needed pathogen control measures that may be necessary for resultant transfers or rearing of progeny?	Pathogen sampling at spawning should be sufficient to provide quantitative and qualitative information for needed pathogen control measures that may be necessary for resultant transfers or rearing of progeny.	B	B
4.2.4	Are eggs water-hardened in iodophor solution as described in the disease control policy?	Eggs should be water-hardened in iodophor solution as described in the disease control policy.	B	B
4.2.4	Are disinfection procedures implemented that prevent pathogen transmission between stocks of fish on site?	Disinfection procedures should be implemented that prevent pathogen transmission between stocks of fish on site.	B	B
5.2	Is spawning waste collected and disinfected prior to discharge to receiving water?	Spawning waste should be collected and disinfected prior to discharge to receiving water.	B	B
5.2	Are carcasses disposed of in a manner that prevents pathogen transmission to the receiving watershed?	Carcasses should be disposed of in a manner that prevents pathogen transmission to the receiving watershed.	B	B



INCUBATION

Framework Section	Operational Guidelines for Incubation		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
3.1, 3.2, 4.1	Are eggs incubated under conditions that maximize the probability that all segments of the population contribute equally to the release population?	Eggs should be incubated under conditions that maximize the probability that all segments of the population contribute equally to the release population.	I	B
3.1, 3.2, 4.1	Are eggs incubated under environmental conditions that tend to maximize survival of all segments of the population? (e.g. control temperature of incubation water to synchronize ponding of fry)	Eggs should be incubated under environmental conditions that tend to maximize survival of all segments of the population. (e.g. control temperature of incubation water to synchronize ponding of fry)	I	B
3.1, 3.2, 4.1, 4.2	Are eggs incubated under environmental conditions that tend to maximize individual fitness of fry? (e.g. allow volitional ponding of fry, incubate under environmental conditions that simulate the natural rearing environment)	Eggs should be incubated under environmental conditions that tend to maximize individual fitness of fry. (e.g. allow volitional ponding of fry, incubate under environmental conditions that simulate the natural rearing environment)	B	B
3.1, 3.2, 4.1	Does incubation take place in home stream water?	Incubation should be take place in home stream water.	I	C
3.2, 4.1	Are full sib families incubated separately?	For integrated programs, full sib families should be incubated separately.	I	C
4.2, 5.2	Does the program use water sources that result in hatching/emergence timing similar to that of the naturally produced population?	Program should use water sources that result in hatching/emergence timing similar to that of the naturally produced population.	I	B
2.1, 2.2, 5.2	Does the number of eggs incubated maintain program size within the carrying capacity of the natural environment?	The number of eggs incubated should maintain program size within the carrying capacity of the natural environment.	B	B
4.2.4	Does incubation occur on pathogen-free and/or fish-free water supply?	Incubation should occur on pathogen-free and/or fish-free water supply.	B	B
4.2.4	Are species-specific incubation recommendations followed for water quality, flows, temperature, substrate, and density parameters to prevent syndromes such as “gas bubble disease”, “cold water disease”, “blue sac”, etc.)?	Species-specific incubation recommendations should be followed for water quality, flows, temperature, substrate, and density parameters to prevent syndromes such as “gas bubble disease”, “cold water disease”, “blue sac”, etc.).	B	B

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Framework Section	Operational Guidelines for Incubation (Cont'd.)		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
4.2.4	Are incubating eggs treated when recommended by attending fish pathologist?	Incubating eggs should be treated when recommended by attending fish pathologist.	B	B
4.2.4	Following eye-up stage, are eggs inventoried, and dead or undeveloped eggs removed and disinfected, as described in the disease control policy?	Following eye-up stage, eggs should be inventoried, and dead or undeveloped eggs removed and disinfected, as described in the disease control policy.	B	B
4.2.4	Are disinfection procedures implemented that prevent pathogen transmission between stocks of fish on site?	Disinfection procedures should be implemented that prevent pathogen transmission between stocks of fish on site.	B	B
4.2.4	Are eggs monitored when needed to determine fertilization efficiency and embryonic development?	Eggs should be monitored when needed to determine fertilization efficiency and embryonic development.	B	B
4.2.4	Are fry removed from incubation units when 80-90% of observed fry have yolk-sac material that is 80-90% utilized and contained within body cavity ("button-up")?	Fry should be removed from incubation units when 80-90% of observed fry have yolk-sac material that is 80-90% utilized and contained within body cavity ("button-up").	B	H
4.2.4	Are appropriate water temperature profiles maintained to provide optimum embryo development?	Appropriate water temperature profiles should be maintained to provide optimum embryo development.	B	B
4.2.4	Are incubator loading and densities maintained at levels that ensure optimum survival of eggs and fry?	Incubator loading and densities should be maintained at levels that ensure optimum survival of eggs and fry.	B	B
4.2, 4.2.4	Is substrate used to promote suitable fry distribution, optimum size, and appropriate emergence timing?	Substrate should be used to promote suitable fry distribution, optimum size, and appropriate emergence timing.	B	B
5.2	Are eggs (dead or culled) discarded in a manner that prevents pathogen transmission to the receiving watershed?	Eggs (dead or culled) should be discarded in a manner that prevents pathogen transmission to the receiving watershed.	B	B



REARING

Framework Section	Operational Guidelines for Rearing		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
3.1, 3.2, 4.1	Are fish reared under conditions that maximize the probability that all segments of the population contribute equally to the release population?	Fish should be reared under conditions that maximize the probability that all segments of the population contribute equally to the release population.	I	B
3.1, 3.2, 4.1	Are all fish reared under environmental conditions that tend to maximize survival of all segments of the population?	All fish should be reared under environmental conditions that tend to maximize survival of all segments of the population.	B	<i>B - SH</i>
3.1, 4.1	Are families within spawning groups mixed randomly at ponding so that unintentional rearing differences affect families equally?	Families within spawning groups should be mixed randomly at ponding so that unintentional rearing differences affect families equally.	I	B
3.1, 3.2, 4.1	Are excess juveniles culled randomly when necessary?	Excess juveniles should be culled randomly when necessary.	B	<i>B - SH</i>
3.1, 3.2, 4.1	Are fish reared in multiple facilities or with redundant systems to reduce the risk of catastrophic loss?	Fish should be reared in multiple facilities or with redundant systems to reduce the risk of catastrophic loss.	B	C
3.1, 4.1	Are fish reared for the shortest period possible?	Fish should be reared for the shortest period possible.	I	C
3.1, 3.2, 4.1	For captive broodstocks, are fish maintained on natural photoperiod to ensure normal maturation and water temperatures below 12°C to minimize disease?	For captive broodstocks, fish should be maintained on natural photoperiod to ensure normal maturation and water temperatures below 12°C to minimize disease.	S	C
3.1, 3.2, 4.1	For captive broodstocks, are diets and growth regimes selected that produce potent, fertile gametes and reduce excessive early maturation of fish?	For captive broodstocks, diets and growth regimes should be selected that produce potent, fertile gametes and reduce excessive early maturation of fish.	S	C
3.2, 4.1	Are families reared individually to maintain pedigrees?	Families should be reared individually to maintain pedigrees.	B	C
3.2, 4.1	If required, are larger families culled to minimize family size variation?	If required, larger families should be culled to minimize family size variation.	I	B
2.3, 3.1, 4.1, 5.1, 5.2	Are fish reared under conditions that maximize homing fidelity?	Fish should be reared under conditions that maximize homing fidelity.	B	<i>B - SC</i>
4.2, 5.2	Does the program use a diet and growth regime that mimics natural growth patterns?	Program should use a diet and growth regime that mimics natural growth patterns.	B	<i>B - SH</i>

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Framework Section	Operational Guidelines for Rearing (Cont'd.)		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
4.2, 5.2	Are natural rearing conditions simulated for rearing density, temperature, photoperiod, hydraulic characteristics, feeding conditions, and predator avoidance training?	Natural rearing conditions should be simulated for rearing density, temperature, photoperiod, hydraulic characteristics, feeding conditions, and predator avoidance training.	I	B
4.2, 5.2	Are the fish produced qualitatively similar to natural fish in size, morphology, behavior, growth rate, physiological status, health, and other attributes?	Fish produced should be qualitatively similar to natural fish in size, morphology, behavior, growth rate, physiological status, health, and other attributes.	I	B
2.1, 2.2, 5.2	Does the number of fish reared maintain program size within carrying capacity of the natural environment?	The number of fish reared should maintain program size within carrying capacity of the natural environment.	B	B
2.4	Are adequate flows maintained in the by-pass reach?	Adequate flows should be maintained in the by-pass reach.	B	B
2.4	Has a riparian management plan been implemented that incorporates vegetation management, herbicide and pesticide use, and surface water management provisions?	A riparian management plan should be implemented that incorporates vegetation management, herbicide and pesticide use, and surface water management provisions.	B	B
2.3, 2.4	Does the facility operate within the limitations established in National Pollution Discharge Elimination System permit?	The facility should operate within the limitations established in National Pollution Discharge Elimination System permit.	B	B
2.4	Has an on or off-site habitat mitigation plan been implemented?	An on or off-site habitat mitigation plan should be implemented.	B	B
4.2.4	Does rearing occur on pathogen-free and/or fish free water supply?	Rearing should occur on pathogen-free and/or fish free water supply.	B	B
4.2.4	Are fish health examinations performed at a minimum of once per month and more frequently when required?	Fish health examinations should be performed at a minimum of once per month and more frequently when required.	B	B
4.2.4	Whenever possible, are vaccines used to minimize the use of antimicrobial compounds?	Whenever possible, vaccines should be used to minimize the use of antimicrobial compounds.	B	B
4.2.4	Are fish treated with appropriate chemicals or drugs as recommended by fish pathologist?	Fish should be treated with appropriate chemicals or drugs as recommended by fish pathologist.	B	B
4.2.4	Are disinfection procedures implemented that prevent pathogen transmission between stocks of fish on site?	Disinfection procedures should be implemented that prevent pathogen transmission between stocks of fish on site.	B	B

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Framework Section	Operational Guidelines for Rearing (Cont'd.)		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
4.2.4	Are predators excluded from ponds to prevent the spread of pathogens between containers?	Predators should be excluded from ponds to prevent the spread of pathogens between containers.	S	B
4.2.4	In the event of an epizootic, are: Treatment recommendations of attending pathologist followed? Are affected containers isolated? Is effluent sanitized if possible?	In the event of an epizootic: Treatment recommendations of attending pathologist should be followed. Affected containers should be isolated? Effluent should be sanitized if possible.	B	B
2.4, 4.2.4	Are settleable solids, unused feed and feces periodically removed to ensure proper cleanliness of rearing container?	Settleable solids, unused feed and feces should be periodically removed to ensure proper cleanliness of rearing container.	B	B
4.2	Does the operator follow proper feeding rates, conduct periodic feed quality analysis, and store feed under proper conditions to prevent nutritional disorders?	The operator should follow proper feeding rates, conduct periodic feed quality analysis, and store feed under proper conditions to prevent nutritional disorders.	B	B
4.2	Are appropriate physical and chemical characteristics of water inflow and effluent (suspended solids, temperature, dissolved gases, pH, mineral content, and potential toxic metals) maintained to promote growth and survival?	Appropriate physical and chemical characteristics of water inflow and effluent (suspended solids, temperature, dissolved gases, pH, mineral content, and potential toxic metals) should be maintained to promote growth and survival.	B	B
4.2	Are accurate fish inventory data maintained (e.g. Hat-Pro) with a minimum of handling stress?	Accurate fish inventory data should be maintained (e.g. Hat-Pro) with a minimum of handling stress.	B	B
4.2	Are appropriate flow and density indexes maintained for the species and life stage being reared?	Appropriate flow and density indexes should be maintained for the species and life stage being reared.	B	B
4.2	Is the correct amount and type of food provided to achieve the desired growth rate, body composition, and condition factors for the species and life stage being reared?	The correct amount and type of food should be provided to achieve the desired growth rate, body composition, and condition factors for the species and life stage being reared.	B	B
4.2.5, 5.2	Are mortalities removed daily and disposed of in a manner that prevents pathogen transmission to the receiving watershed?	Mortalities should be removed daily and disposed of in a manner that prevents pathogen transmission to the receiving watershed.	B	B
4.4.1	Are facility and species-specific recommendations for water quality, temperature, loading, and density followed to maximize recruitment to fisheries?	Facility and species-specific recommendations for water quality, temperature, loading, and density should be followed to maximize recruitment to fisheries.	S	H



RELEASE AND ADULT MIGRATION

Framework Section	Operational Guidelines for Release and Adult Migration		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
2.3, 3.1, 4.1, 5.1, 5.2	Are fish released at life stages and locations that maximize homing fidelity?	Fish should be released at life stages and locations that maximize homing fidelity.	B	B - SC
3.1, 4.1, 5.1	Are marking/tagging techniques used to distinguish among segments of the hatchery population and between the hatchery and natural populations?	Marking/tagging techniques should be used to distinguish among segments of the hatchery population and between the hatchery and natural populations.	B	B
4.1, 5.1	Are fish identified with nonlethal detectable identification marks or tags?	Fish should be identified with nonlethal detectable identification marks or tags.	I	C
2.3, 3.1, 4.1, 5.1, 5.2	Is the straying of hatchery fish into the wild controlled?	Straying of hatchery fish into the wild should be controlled.	B	H
2.3, 3.1, 5.1, 5.2	Is the attraction of hatchery fish maximized and that of wild fish minimized?	The attraction of hatchery fish should be maximized and that of wild fish minimized.	S	H
3.2, 5.3	Are hatchery fish identified so the status of the natural population is not masked?	Hatchery fish should be identified so the status of the natural population is not masked.	B	B - SC
4.2, 5.2	Are fish released within the size range of naturally produced fish from which the hatchery population is derived?	Fish should be released within the size range of naturally produced fish from which the hatchery population is derived.	I	B
3.1, 4.1, 4.2, 5.2	Are volitional releases during natural out-migration timing practiced?	Volitional releases during natural out-migration timing should be practiced.	I	B
4.2, 5.2	Are fish released at sizes and life history stages similar to those of natural fish of the same species?	Fish should be released at sizes and life history stages similar to those of natural fish of the same species.	I	B
2.3, 5.2	Are fish released in areas or at life history stages where they are unlikely to encounter or prey upon natural fish of the same or other species?	Fish should be released in areas or at life history stages where they are unlikely to encounter or prey upon natural fish of the same or other species.	B	B - SC
2.3, 5.2	Are fish released in a manner so they are unlikely to encounter or prey upon natural fish of the same or other species?	Fish should be released in a manner so they are unlikely to encounter or prey upon natural fish of the same or other species.	B	B - SC
2.1, 2.2, 2.3, 5.2	Are fish released in numbers that do not exceed the carrying capacity for the natural population?	Fish should be released in numbers that do not exceed the carrying capacity for the natural population.	B	B - SC

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Framework Section	Operational Guidelines for Release and Adult Migration (Cont'd.)		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
2.3, 5.2	Are fish released in stream reaches within the historic range of that species?	Fish should be released in stream reaches within the historic range of that species.	B	B - SC
3.1, 4.2, 5.2	Are fish released in a manner that simulates natural migratory patterns?	Fish should be released in a manner that simulates natural migratory patterns.	B	B - SC
2.3, 3.1, 4.1, 5.1, 5.2	Are fish released in areas with adequate imprinting to the facility or desired stream reach?	Fish should be released in areas with adequate imprinting to the facility or desired stream reach.	B	B - SC
2.3, 5.2	Are fish released at locations where they are unlikely to encounter natural fish that are negatively affected by hatchery fish?	Fish should be released at locations where they are unlikely to encounter natural fish that are negatively affected by hatchery fish.	B	B - SC
2.1, 5.2	Are fish released into properly functioning freshwater, estuarine and marine habitat?	Fish should be released into properly functioning freshwater, estuarine and marine habitat.	B	B - SC
2.4	Does the hatchery operate to allow all migrating species of all ages to pass through hatchery related structures to maximize use of natural habitat?	The hatchery should operate to allow all migrating species of all ages to pass through hatchery related structures to maximize use of natural habitat.	B	B - SC
2.4	Are adults distributed upstream of hatchery to meet habitat capacity?	Adults should be distributed upstream of hatchery to meet habitat capacity.	I	B
2.4	Is unimpeded passage provided for wild fish through hatchery structures and by-pass reaches?	Unimpeded passage should be provided for wild fish through hatchery structures and by-pass reaches.	B	B - SC
4.2.4	Are all fish examined for presence of "reportable pathogens" as defined in the disease control policy at the assumed pathogen prevalence Level (APPL) of 5% no less than 3 weeks prior to release?	All fish should be examined for presence of "reportable pathogens" as defined in the disease control policy at the assumed pathogen prevalence Level (APPL) of 5% no less than 3 weeks prior to release.	B	B - SC
4.2.4	Are attending fish pathologist recommendations followed for treatments prior to release?	Attending fish pathologist recommendations should be followed for treatments prior to release.	B	B - SC
4.2.4	Are fish released in same drainage as rearing facility?	Fish should be released in same drainage as rearing facility.	B	B - SC

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Framework Section	Operational Guidelines for Release and Adult Migration (Cont'd.)		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
4.2.4	Are transfers out of drainage inspected as above and accompanied by appropriate notifications to responsible/regulatory parties as described in the disease control policy?	Transfers out of drainage should be inspected as above and accompanied by appropriate notifications to responsible/regulatory parties as described in the disease control policy.	B	B
2.1, 3.1, 4.1	Are fish released at times of the year and sizes to allow adoption of multiple life history strategies?	Fish should be released at times of the year and sizes to allow adoption of multiple life history strategies.	B	<i>B - SC</i>
4.4.1	Are fish released at a time, size, location, and in a manner that maximizes recruitment to fisheries?	Fish should be released at a time, size, location, and in a manner that maximizes recruitment to fisheries.	S	H



ACCOUNTABILITY

Framework Section	Operational Guidelines for Accountability		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
6.1	Are all hatchery personnel aware of the goals for the hatchery with respect to conservation, harvest and other purposes?	All hatchery personnel should be aware of the goals for the hatchery with respect to conservation, harvest and other purposes	B	B
6.1	Are expenditures tracked to assure that funds are expended as intended for the hatchery program?	Expenditures should be tracked to assure that funds are expended as intended for the hatchery program.	B	B
6.1	Are KEY staff aware of the funding available for carrying out the various activities in the production cycle so that it can be done the most cost effective manner?	Key staff should be aware of the funding available for carrying out the various activities in the production cycle so that it can be done the most cost effective manner.	B	B
6.1	Is all new relevant information from research or other sources made available to hatchery staff and others and used for attaining goals?	All new relevant information from research or other sources should be made available to hatchery staff and others and used for attaining goals.	B	B
6.1	Is the most recent information obtained from monitoring and evaluation programs for the production cycle, including performance indicators and progress toward goals, taken into consideration when determining whether hatchery operations should be changed or not?	The most recent information obtained from monitoring and evaluation programs for the production cycle, including performance indicators and progress toward goals, should be taken into consideration when determining whether hatchery operations should be changed or not.	B	B
6.1	Is there a management program in place that assures that information pertaining to items 1-4 is available on a "real-time" basis and that changes warranted by that information are implemented?	There should be a management program in place that assures that information pertaining to items 1-4 is available on a "real-time" basis and that changes warranted by that information are implemented.	B	B
6.1	Are standards specified for in-culture and post release performance of hatchery fish and their offspring?	Standards should be specified for in-culture and post release performance of hatchery fish and their offspring.	B	B
6.1	Are there state or federal laws that constrain the program by specifying objectives, such as numbers and size of smolt produced?	State or federal laws that constrain the program by specifying objectives, such as numbers and size of smolt produced, should be reviewed and conflicts reported.	B	B



EDUCATION

Framework Section	Operational Guidelines for Education		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
1.13	Is the hatchery facility open to the public during hours of operation?	The hatchery facility should be open to the public during hours of operation.	B	B
1.13	Are the hatchery operations visible to facility visitors?	Hatchery operations should be visible to facility visitors.	B	B
1.13	Are hatchery operations (egg take, incubation, rearing) demonstrated to the public?	Hatchery operations (egg take, incubation, rearing) should be demonstrated to the public.	B	B
1.13	Does the facility have a fish ladder and/or adult holding facilities that are open to the public?	If the facility has a fish ladder and/or adult holding facilities they should be are open to the public.	B	B
1.13	Does the hatchery have signage describing the facility, fish production goals, ties to management goals, ecosystem function?	The hatchery should have signage describing the facility, fish production goals, ties to management goals, ecosystem function.	B	B
1.13	Is there a visible link to riparian zone such as viewing boardwalk or bridge?	There should be a visible link to riparian zone such as viewing boardwalk or bridge.	B	B
1.13	Is the facility used by other fish and wildlife programs?	When beneficial, the facility should be used by other fish and wildlife programs.	B	B
1.13	Does the hatchery schedule tours for groups?	The hatchery should schedule tours for groups.	B	B
1.13	Does the program provide opportunities for student interns?	The program should provide opportunities for student interns.	B	B
1.13	Does the program provide opportunities for citizen volunteer involvement?	The program should provide opportunities for citizen volunteer involvement.	B	B
1.13	Does the agency maintain a web page describing the hatchery program?	The agency should maintain a web page describing the hatchery program.	B	B
1.13	Is a pamphlet or brochure describing agency or hatchery programs available?	A pamphlet or brochure describing agency or hatchery programs should be available.	B	B

HATCHERY SCIENTIFIC REVIEW GROUP

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Framework Section	Operational Guidelines for Education (Cont'd.)		Applicability	
	QUESTIONS	GUIDELINES	Program Type (S = Segregated, I = Integrated, B = Both)	Program Purpose (C = Conservation, H = Harvest, B = Both)
1.13	Are eggs or fish provided to volunteer groups?	Are eggs or fish provided to volunteer groups?	B	B
1.13	Are eggs or fish provided to educational groups i.e. "Salmon in the Classroom"?	Are eggs or fish provided to educational groups i.e. "Salmon in the Classroom"?	B	H
1.13	Is hatchery staff involved in community/volunteer meetings or outreach programs?	Hatchery staff should be involved in community/volunteer meetings or outreach programs.	B	B
1.13	Does hatchery staff regularly give classroom presentations?	Does hatchery staff regularly give classroom presentations?	B	B
1.13	Does hatchery staff participate in formal professional presentations/seminars?	Hatchery staff should participate in formal professional presentations/seminars.	B	B
1.13	Is the facility used or does staff participate in agency research projects?	Where appropriate and beneficial, the facility should be used and staff should participate in agency research projects.	B	B
1.13	Is the facility used or does staff participate in university or other cooperative research projects?	Is the facility used or does staff participate in university or other cooperative research projects?	B	B
1.13	Are data and information pertaining to the program accessible to interested researchers?	Data and information pertaining to the program should be accessible to interested researchers.	B	B