



TRAPPING HOLDING SPAWNING INCUBATION REARING RELEASE

FINS Database Program



PSMFC FINS Team and Cooperators

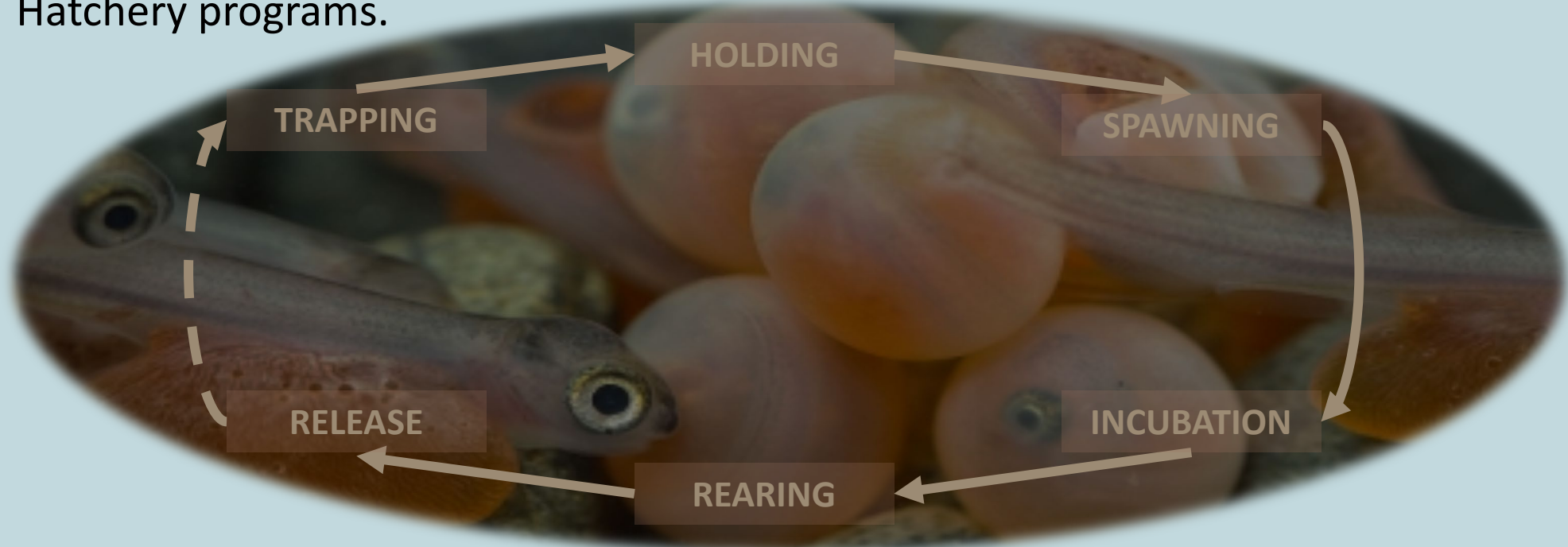
Tara Garrison, PSMFC FINS Project Manager
Nancy Leonard, PSMFC Program Manager
Stan Allen, PSMFC Senior Program Manager
ISRP LSRCP Chinook Review November 13-15, 2022



What is the Fish Inventory System (FINS)

A collaborative hatchery database that

- Tracks production from adult collection to egg and juvenile releases.
- Supports information needs
 - Lower Snake River Compensation Plan.
 - Hells Canyon Settlement Agreement.
 - Hatchery programs.



How is FINS Data Being Used?

Inform Hatchery
Management

Fulfill
Data Requests

Simplify
Reporting

Connect Data
to other Databases

Track All Data Points:
Trapping to Release

Support Snake Basin
Coordination

Learn more about real-life uses by viewing the presentation on the bottom of the webpage:
<https://public.finsnet.org/modules/>



Evolution of FINS

An iterative development approach to continuously improve and better support its cooperators

- <2011, IDFG's Hatchery Data Management System (HDMS).
- 2011, FINS established for real-time access to standardized data.
- 2012, FINS desktop application in-development.
- 2013, official start of migration from HDMS.
- 2014, FINSNet.org web portal for data entry and queries.
- 2014-present, modules and functionalities added with focus on FINS Online.

FINSNet.org Web Portal

Large query capabilities.

Authenticated users access data and location specific menus for custom functionality.

Administration tools for setting up each Facility submitting data.



FINS and 2011-2014 LSRCP ISRP Review Recommendations

FINS has developed in a manner that aligns with the 2014 ISRP recommendations

- Centralized database accessible to all cooperators
- Standardized data for assessing in-hatchery performance, mitigation, and informing management.

*ISRP 2011-2014 recommendation:
In-hatchery performance metrics for
LSRCP hatcheries should be imported
into a centralized database that is
accessible to the cooperators.*

The screenshot displays the 'FINS Search' interface. At the top, there are tabs for 'Search' and 'Results'. Below this, search filters are visible: 'Start Date' (11/6/2021 8:00 AM), 'End Date' (11/6/2022 8:00 AM), and 'Brood Year' (1977, 1981, 1982, 1983). A 'Default dates' link is also present. The main search area is divided into several sections: 'General' (selected), 'Adult', 'Subadult', and 'Identifiers'. Under 'General', there are dropdown menus for 'Agency/Facility/Domain' (Snake Basin), 'Module' (Holding, Incubation, Rearing, Spawning, Trapping), 'Species' (Chinook, Steelhead, Bridge Lip Sucker, Brook Trout), 'Location Type' (Disposal, FoodBank, Holding, IncubationContainer), 'Purpose (Disposition)' (Accidental (Disposed), Biological Sampling (Disposed), Biological Sampling/Pathology (Dispose), Disease (Disposed), Distribution (Disposed), Education/Research (Disposed)), 'Stock' (Big Canyon (56H), Catherine Creek (201H), Clear Creek, Clear Creek), 'Moved To' (ReleaseSite: Above BV Weir, ReleaseSite: Above Crooked Fork Creel, ReleaseSite: Above Crooked River Trap), and 'Disposition' (Disposed, Incubating). On the right, 'Search Criteria' shows 'Dates: Start Date: 11/06/2021 08:00 AM, End Date: 11/06/2022 08:00 AM' and 'General: Agency/Facility/Domain: Snake Basin'. There are also input fields for 'Lot # Equals', 'Fish ID Equals', and 'Spawn ID Equals'.



For FINS technical details access this document from the FINS/Documents webpage: [FINS Technical Summary](#)
Summary Review of the Lower Snake River Compensation Plan 2011-2014 ([ISRP 2014-6](#))



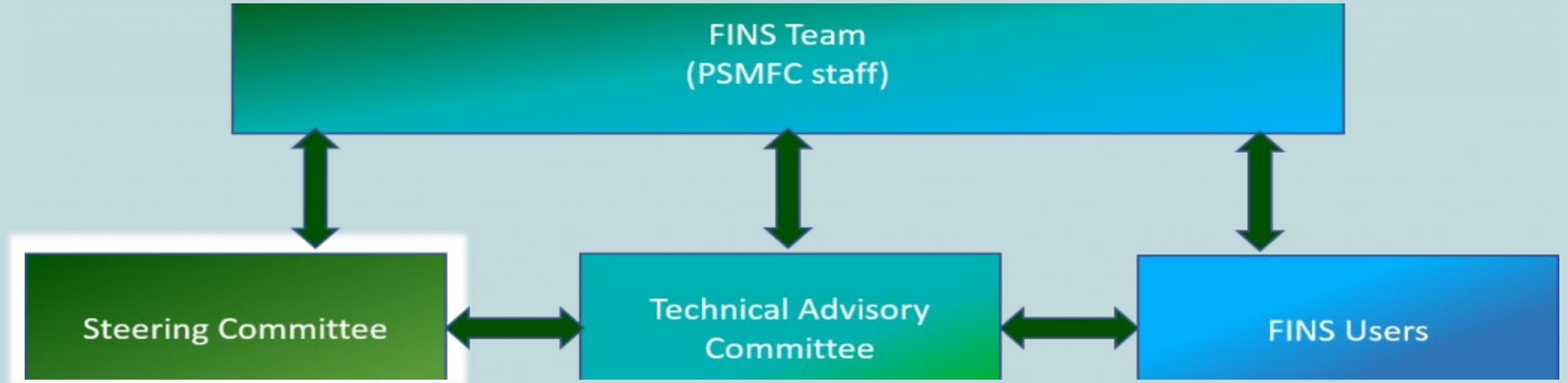
FINS Development and Enhancements are Driven by Users

User Satisfaction Assessed	User Requests Received and Assessed
<ul style="list-style-type: none">• Quarterly meetings• Support request events (calls/emails)	<ul style="list-style-type: none">• Email, training, TAC meetings, beta testing• Requests are discussed with Steering Committee

Event Log	Audits
By Date/Time <ul style="list-style-type: none">▪ Login▪ Logout▪ Errors▪ Query Run Time	Usage by User by Date <ul style="list-style-type: none">▪ Data Entry - Create, Update, Delete▪ Queries▪ Videos



FINS Decision Process and Implementation



Representatives from agencies and tribes

- Review PSMFC's FINS annual statement of work.
- Prioritize development of enhancements.
- Coordinate with other funding agencies regarding FINS administration.
- Represent the funding interests and needs of each entity.

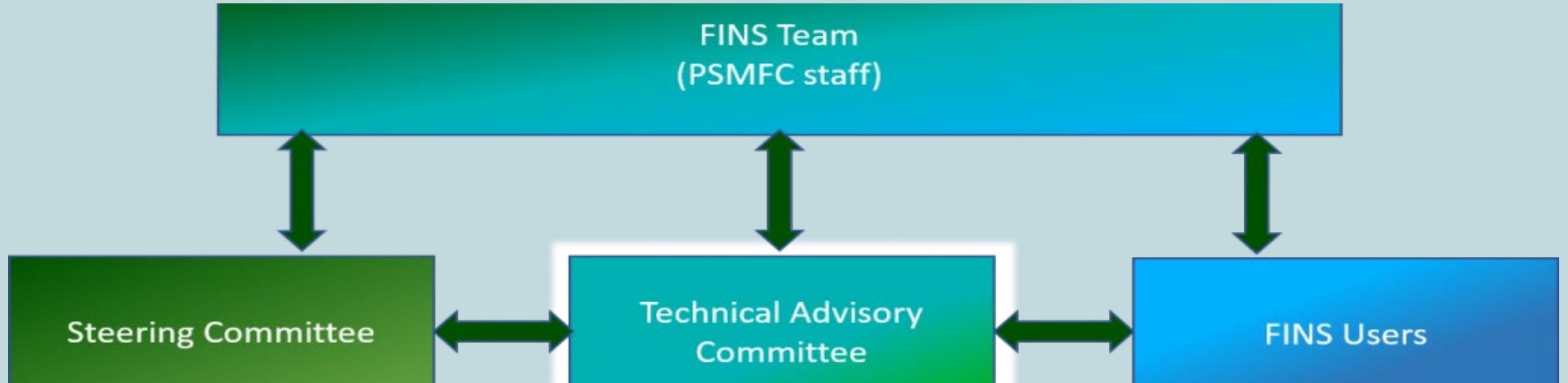


For more details see FINS Charter accessible from the FINS Document webpage:

<https://public.finsnet.org/about-us/documents/>



FINS Decision Process and Implementation



Representatives from FINS users including hatchery managers, hatchery monitoring and evaluation biologists, hatchery technical experts, and other data coordinators

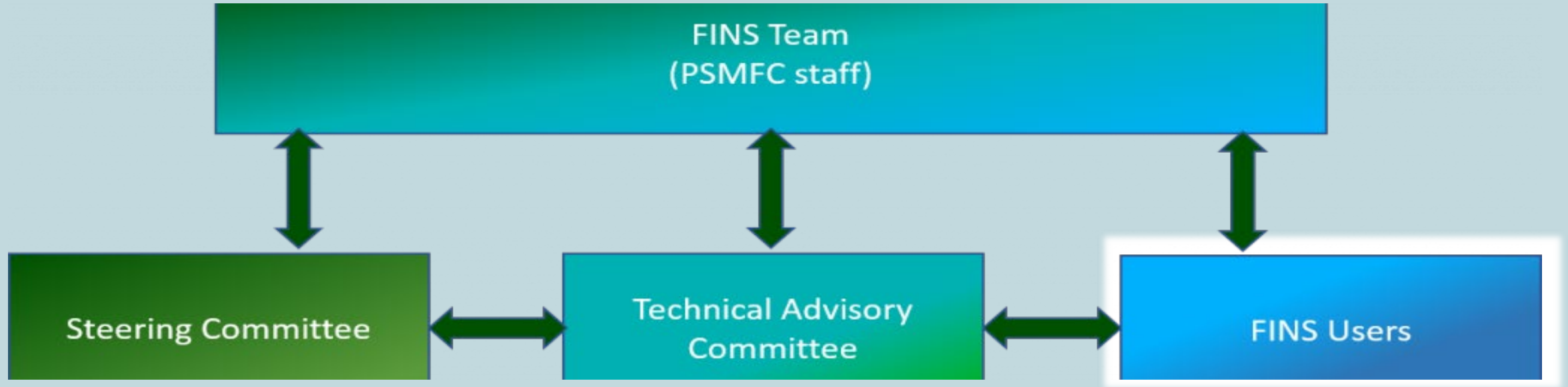
- Serve as FINS Experts.
- Provide technical input on overall functionality, and on beta and final products.
- Vet enhancement requests and use cases.
- Report priority requests and issues to Steering Committee.
- Represent multiple agencies/tribes and type of FINS users.

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FINS Decision Process and Implementation



Agency and Tribal staff

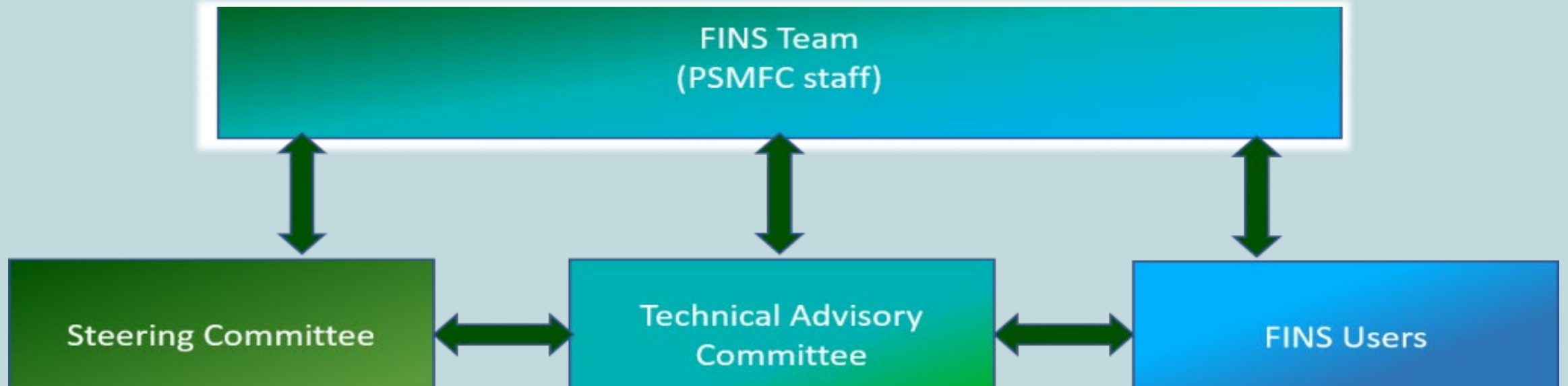
- Over 100 active users.
- Users are considered active if they have accessed FINS within 6-months.
- Inactive users deleted quarterly.



For more details see FINS Charter accessible from the FINS Document webpage:
<https://public.finsnet.org/about-us/documents/>



FINS Decision Process and Implementation



FINS team manages, develops, and implements database and user applications.

Project Manager

Tara Garrison

(PSMFC Project Manager)

Web Architect

Marc Stromberg

(PSMFC IT Supervisor Database Management Specialist)

Support Specialist

Joe Hayes

(PSMFC IT Applications Software Specialist)

Training Specialist

Jorge Gonzales

(PSMFC IT Applications Software Specialist)

Developer

Vacant

(PSMFC IT Applications Software Specialist)



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FINS Data Modules

span entire hatchery production cycle

Trapping Module (1st release 2013)



Holding Module (2015)



Spawning Module (2015)



Incubation Module (2016)



Rearing Module (added 2017)



Release Module (added ~2017)



Overall Scope of Snake River Basin Domain Hatchery Data in FINS*

- 14 fish species.
- 50 different hatchery stocks.
- 3 state agencies
- 3 tribal agencies
- 2 federal agencies
- 36 programs (facilities/weir)
- 200+ subadult (egg/juvenile) release sites



	IDFG	
Bridge Lip Sucker	ODFW	Coho
Brook Trout	WDFW	Largescale Sucker
Brown Trout	CTUIR	Mtn White Fish
Bull Trout	NPT	Rainbow Trout
Chinook	SBT	Sockeye
Chisel Mouth	NOAA-F	Steelhead
Chum	USFWS	White Sturgeon

*Summary of 2021 content which is not limited to Spring/Summer Chinook

2022 LSRCP Spring-Summer Chinook Hatchery Data in FINS

Spring/Summer Chinook

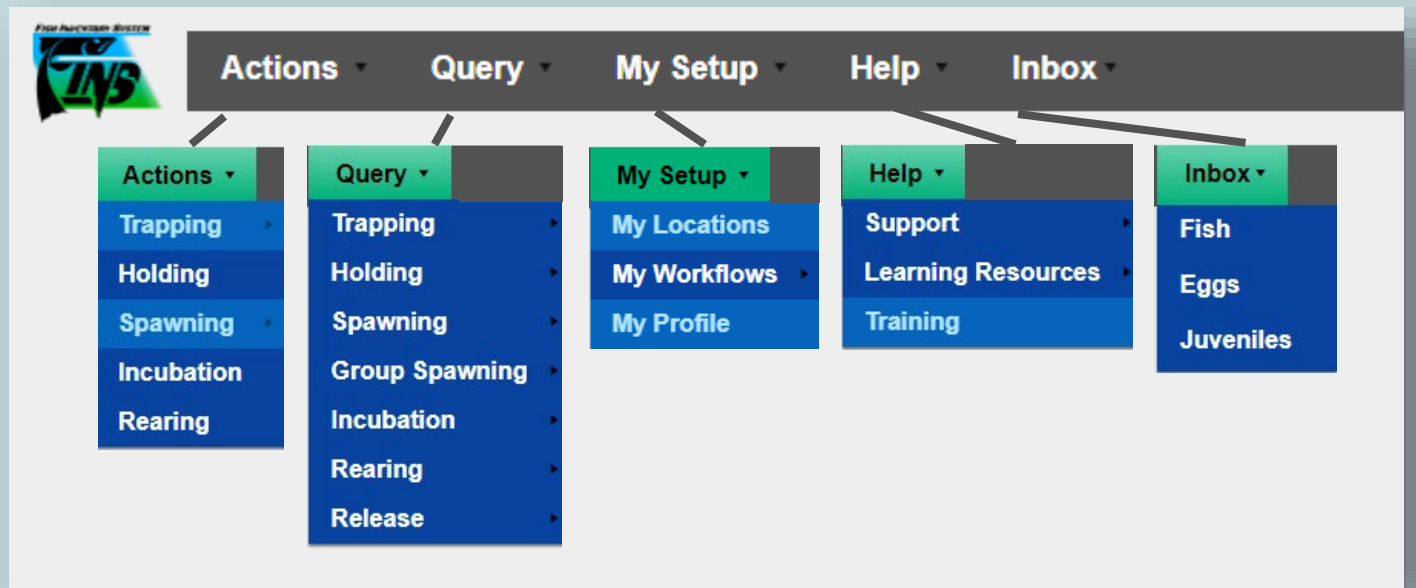
- Data spans 2014 to 2022.
- 9 brood years (brood year is designated at spawning).
- Trapped and spawned from over 10 facilities/programs, involving 5 agencies/tribes.



FINS Data Quality Processes

Guided data entry through web application

- Business logic enforced by validation of client input.
- Restriction of data value selections applied via dropdown menus.
- Relational database provides inherent metadata availability.
- Range checks applied to user inputs.



FINS Resources for Authorized Users

Support for proper use and data quality

- On demand training.
- Access to FINS Support
 - Email, phone, and dedicated support hours.
- Training videos
 - Over 100 videos covering specific components.
- Documentation
 - User manual, glossary, definitions, FAQ.
- Integrated tech support links
 - Quick bug reporting.
 - Support requests.

The image displays three overlapping screenshots of the FINS website. The top screenshot shows the main navigation menu with 'USER' selected, revealing a sub-menu with options like 'user', 'learning resources', 'fins support', 'training calendar', 'training videos', 'introduction', 'admin', 'queries', 'trapping', 'holding', 'spawning', 'group spawning', 'incubation', 'rearing', 'release', and 'offline'. The middle screenshot shows a video player titled 'Introduction' with the FINS logo and a 'Presentation Purpose' section. The bottom screenshot shows a 'Download Identifier File' section with a table of fish marks.

Marks	Description	Code
Marks	Any one of a group of physical marks (fin clips, punches, brands, etc.) applied to fish in order to identify the group membership of individual fish.	
Adipose Clipped	A mark recognized by the partial or complete removal of the adipose fin.	AD
Anal Fin Punch	A mark recognized as a hole in the anal fin. The hole left by the punch may be a variety of shapes. There is no specificity with regards to the location of the hole on the fin.	AP
Caudal Punch	A mark recognized as a hole in the caudal fin. The hole left by the punch may be a variety of shapes. There is no specificity with regards to the location of the hole on the fin.	CP
Eroded Fins	Deformation or erosion of any of the dorsal, caudal, or ventral fins. This mark is used as a distinguishing feature of hatchery reared steelhead trout.	EF
Lower Left Opercule Punch	A mark recognized as a hole located below the horizontal midline in the interior of the left operculum. The hole left by the punch may be a variety of shapes.	LLOP
Left Maxillary	A clip taken from the left maxillary bone of a fish's jaw	LM
Left Opercule Punch	A mark recognized as a hole in the interior of the left operculum. The hole left by the punch may be a variety of shapes.	LOP
Left Opercule Notch	A mark recognized as a notch on the margin of the left operculum.	LON
Left Pelvic Punch	A mark recognized as a hole in the left pelvic fin. The hole left by the punch may be a variety of shapes. There is no specificity with regards to the location of the hole on the fin.	LPP
Left Ventral Fin Clipped	The partial or complete absence of either of the left pelvic or pectoral fins.	LV
Lower Caudal Punch	A mark recognized as a hole located below the horizontal midline of the caudal fin. The hole left by the punch may be a variety of shapes.	LCP
Lower Right Opercule Punch	A mark recognized as a hole located below the horizontal midline in the interior of the right operculum. The hole left by the punch may be a variety of shapes.	LROP
Right Opercule Punch	A mark recognized as a hole in the interior of the right operculum. The hole left by the punch may be a variety of shapes.	ROP
Right Opercule Notch	A mark recognized as a notch on the margin of the right operculum.	RON
Right Pelvic Punch	A mark recognized as a hole in the right pelvic fin. The hole left by the punch may be a variety of shapes. There is no specificity with regards to the location of the hole on the fin.	RPP



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[FINS Technical Summary](#)



FY2023 Feature Release

FINS Parentage-Based Tagging / Tracking Rate Tool

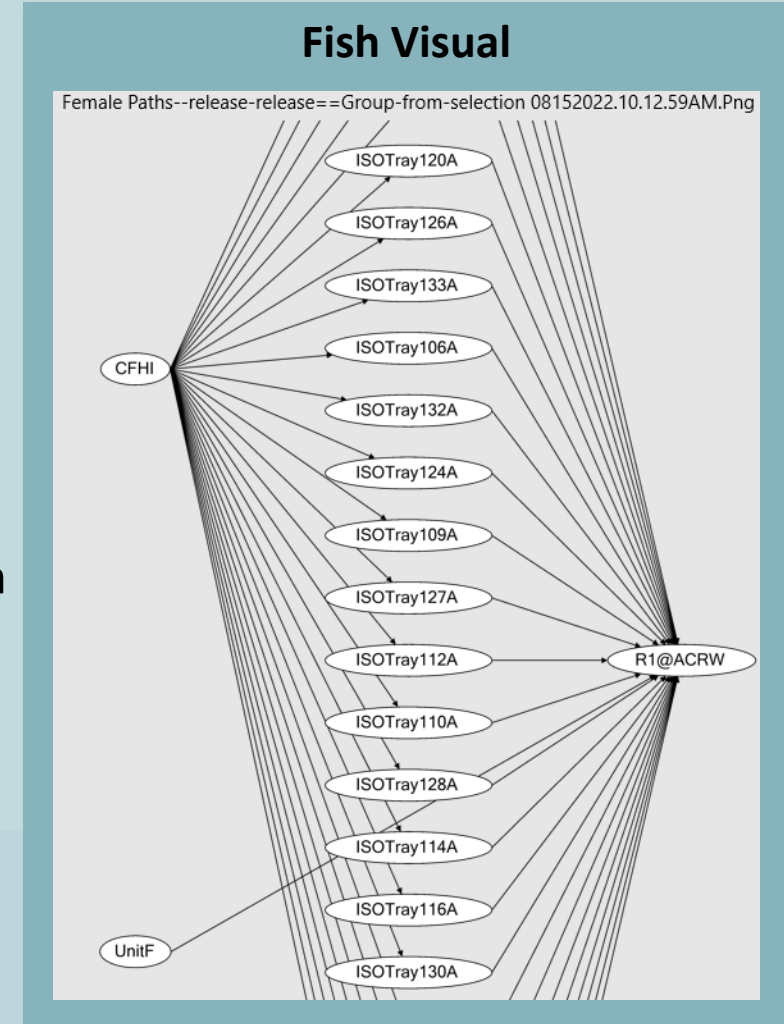
(currently in Beta Testing)

Tool provides ability to

- Upload and store Fish Health Genetic 'Progeny' Database genotype data into FINS.
- Validate Male/Female spawning pairs against FINS Spawn Cross data
 - FINS Spawn Sample Values formatted to match 'Progeny' file format
- Calculate
 - Genotype Rate: % pairs associated with a collection (release event) successfully genotyped.
 - Tracking Rate: % juveniles associated with females exclusive to a collection, to the number of juveniles associated with the females in the collection.
 - Tagging Rate: product of the Tracking Rate and Genotype Rate.

Female Visual

- View of all, or selected, Female Move Paths in a release showing what containers they traveled through



Highlights of Existing FINIS Features

Fish Return Summary

- Summary by Facility of holding/broodstock inventory and final disposition
- Combined view per query filter selections:
 - Total in (Trapped, Received),
 - Total Pondered (On Hand),
 - Total Out (Spawned, Disposed, Released, Shipped).
- Enhanced dynamic Query Tool filter menu
 - Filter options adjusted based on available data as selections are applied.
- Summary layout options
 - Can be saved (not filter selections)
 - Shared within a Facility or at an Agency level to provide standardized summary output between query users.

FISH RETURN SUMMARY										
Trapped (to Date)	Living Status	Purpose	Disposition	Moved To	Origin	Age	Non Recap Male	Non Recap Female	Non Recap Total	Total
	Alive	Brood Stock	Pondered	HP 1	Hatchery-Segregated	Adult	534	512	1046	1046
						Jack/Jill	7	6	13	13
						Hatchery-Integrated	Adult	22	25	47
		Natural Spawning	Released	Above Weir	Natural	Adult	20	18	38	38
						Jack/Jill	4	1	5	5
						Adult	32	24	56	56
	General Holding	Pondered	HP West	Hatchery-Integrated	Adult	1		1	1	
					Jack/Jill	49		49	49	
					Adult	78	63	141	141	
Jack/Jill	360		360	360						
Total Trapped							1128	658	1786	1786
Total In							1128	658	1786	1786
Pondered (On Hand Inventory as of 7/20/2022)				Holding Location	Origin	Visual Age	Unknown	Male	Female	Total
				HP 1	Hatchery-Segregated	Adult		587	560	1147
				SFH: HP West	Hatchery-Segregated	Adult		328	63	391
Total Pondered							0	915	623	1538
Released	Living Status	Purpose	Moved From	Moved To	Origin	Age	Male	Female	Total	
	Alive	Natural Spawning	Above Weir	Above Sawtooth Weir	Natural	Adult	32	24	56	
						Jack/Jill	13		13	
		Hatchery-Integrated	Adult	8	9	17				
Fisheries	HP West	Mainstem	Hatchery-Segregated	Jack/Jill	159		159			
Total Released								212	33	245
Disposed	Living Status	Purpose	Moved From	Moved To	Origin	Age	Male	Female	Total	
	PondMort	General Disposal	HP 1	Landfill	Hatchery-Segregated	Adult		2	2	
			HP West	Landfill	Hatchery-Segregated	Adult	1		1	
			Jack/Jill	1		1				
Total Disposed								2	2	4
Total Out								214	35	249

Highlights of Existing FINs Features

Green/Enumerated Inventory Report

(user requested summary)

- Summarized output for in-season and post-season annual reporting by
 - Brood Year, Facility, Species, Hierarchy and Female ID of all Spawning Sessions by Date and Lot # for viewing Egg Enumeration status for all spawned eggs
- Report enhanced per Beta Testing user feedback to include Green (Non - Enumerated) Egg data for comparison/contrast

Brood Year	Session Date Range	Spawned Female Count	Egg Stage	Enumerated Female Count	Estimated Egg Count	Actual Green Take	Average Actual Green Take	Inventory Count	Loss	Eye Up Rate
BY 2021	8/6/2021 - 9/17/2021	1305	Eyed Eggs, Green Eggs	1187	4460400	4647009	3915	4440889	206120	95.56%
Facility: Clearwater Fish Hatchery										
Drag a column header and drop it here to group by that column										
Hierarchy	Egg Stage	Enumerated Female Count	Estimated Egg Count	Actual Green Take	Average Actual Green Take	Inventory Count	Loss	Eye Up Rate		
CFH SpCH BY2021 Clear Cr	Eyed Eggs	215	731000	842413	3918	810000	32413	96.15%		
CFH SpCH BY2021 NF Clearwater-General	Eyed Eggs	296	1006400	1129995	3818	1082791	47204	95.82%		
CFH SpCH BY2021 Red R	Eyed Eggs	343	1166200	1423536	4150	1363982	59554	95.82%		
CFH SpCH BY2021 Selway-Lower	Eyed Eggs	119	404600	474083	3984	458745	15338	96.76%		
CFH SuCH BY2021 Powell	Eyed Eggs	214	750700	776982	3631	725371	51611	93.36%		
N/A	Green Eggs	0	401500							
Drag a column header and drop it here to group by that column										
Female ID	Cross ID	Session Date	Lot #	Run	Stock	Program	Estimated Egg Count			
OtsCLWH21S0065	OtsCLWH21S0065_CFH SpCH BY2021 Red R/UnitA/Stack4/Tray64	8/17/2021 8:00 AM	3	Spring	Cleanwater	Segregated	3400			
OtsCLWH21S0168	OtsCLWH21S0168_CFH SpCH BY2021 Red R/UnitB/Stack11/Tray166	8/17/2021 8:00 AM	3	Spring	Cleanwater	Segregated	3400			
OtsCLWH21S0181	OtsCLWH21S0181_CFH SpCH BY2021 Red R/UnitB/Stack12/Tray178	8/17/2021 8:00 AM	3	Spring	Cleanwater	Segregated	3400			
OtsCLWH21S0201	OtsCLWH21S0201_CFH SpCH BY2021 Red R/UnitB/Stack13/Tray198	8/17/2021 8:00 AM	3	Spring	Cleanwater	Segregated	3400			

Highlights of Existing FINS Features

Import Tool

Replaces manual data entry process to facilitate upload data:

- Past and/or received data from non-FINS Facilities.
- Historical data and/or data from facilities that do not collect unique individual data on each spawn cross.
- Custom non-standardized data fields that the collaborator collected and wants to be able to query within FINS.

The screenshot shows the FINS web application interface. At the top, there is a navigation menu with links for Home, Products, About, Data (highlighted), User, and Admin. Below the navigation is the 'Query Tool' section, which includes a dropdown menu set to 'Import Incubation Data'. A text box explains that the Import Tool is available for 4 modules: Trapping, Spawning, Incubation, and Rearing. It provides instructions on how to use the tool, including a link to 'Incubation import required columns, validation of fields, and examples' and a 'begin import session' button. Below this is a table titled 'Incubation Import Validation File.xlsx - Excel' showing columns H, I, and J. Column H is labeled 'Run', column I is 'Stock', and column J is 'Program-Incubation'. The table also includes a 'Lot Take' column. The table content is as follows:

	H	I	J	
	Run	Stock	Program-Incubation	
Egg Take	Run of Spawn Record	Agency Stock Name of the Cross for this Egg Take	Intended Program Name of Progeny assigned to Egg Take; INTEGRATED : Integrated: A progeny group that usually consists of eggs resulting from a Hatchery by Natural spawn cross; SEGREGATED : A progeny group that usually consists of eggs resulting from a Hatchery by Hatchery spawn cross	Lot Take
Species; Abbreviations species that are available in listed in Example Data List (Brown Trout, White Fish)	Required Column; Can be left blank if Species does not = Chinook and/or Steelhead; Expected Value must be FINS Database Run Name; by Species	Required; FINS Database Stock Name; by Agency	Conditionally required. If left empty, this column will receive the value in Spawn Session Progeny Column; FINS Database Program; Integrated or Segregated.	
Stock	Spring	LGH 81	Integrated	

Highlights of Existing FINS Features

Custom Search/Query Filter Tool

Summary capability and improved data sharing to support coordination and data QA/QC by users

- FINS Search Tool
 - Custom querying for any FINS Hatchery
 - View output on screen.
 - Generates custom downloads.
 - Save queries for private or agency/facility use.
 - Searches data in Trapping, Holding, Spawning, Incubation, Rearing and Release.
- Pivot Summary (within FINS Search Tool)
 - Users can analyze and summarize their data by creating pivot tables for all FINS search results.

The screenshot displays the 'FINS Search' interface. At the top, there are tabs for 'Search' and 'Results'. Below this, search parameters are set: 'Start Date' (11/8/2021 8:00 AM) and 'End Date' (11/8/2022 8:00 AM). A 'Brood Year' dropdown menu is set to 1977. The interface is divided into several sections: 'General' (Agency/Facility/Domain, Location Type, Moved To), 'Module' (Holding, Incubation, Rearing, Spawning, Trapping), 'Species' (Chinook, Steelhead, Bridge Lip Sucker, Brook Trout), 'Purpose (Disposition)', and 'Stock'. A 'Search Criteria' panel on the right summarizes the search parameters, including dates, agency (Snake Basin), module (Trapping), purpose (Brood Stock (Ponded)), and species (Chinook). Buttons for 'Reset Form', 'Search', and 'Close' are visible at the bottom right.

The screenshot shows the 'Pivot Summary' interface. It features three main selection areas: 'Query Selection(s)' with a list including Trapping, Holding, Spawning, Incubation, Rearing, Juvenile Release, and Egg Release; 'Field Selection' with a list of fields such as Finalize, Verify, Follow-Up, Trapped Date, Is Import, Facility, Trap, and Trap Is Offsite; and 'Row Selection' with a 'Row Fields' dropdown. A 'Column Selection' area with 'Column Fields' is also present. A note at the bottom states: 'Selecting a dataset will load the Field Selection Filter with all columns associated with Query selected'.

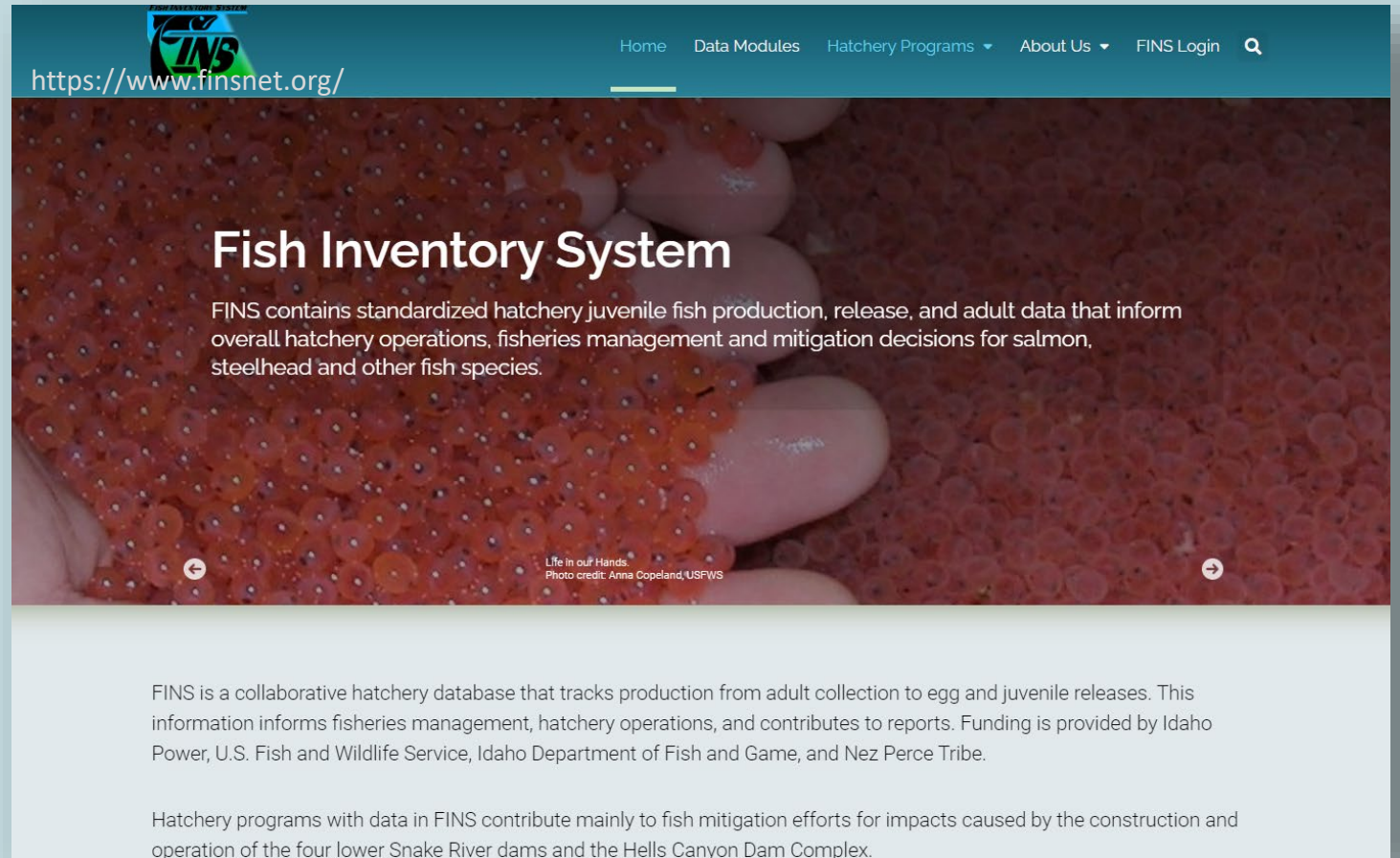


Highlights of Existing FINS Features

New Public Website

Target audience

- Reviewers, funders, and future cooperators.
- Enhances understanding about
 - Purpose
 - Process guiding FINS
 - Cooperators
 - Funding sources
 - Participating hatchery programs
 - Data categories



Thank you!



FISH INVENTORY SYSTEM



TRAPPING HOLDING SPAWNING INCUBATION REARING RELEASE

Covering the entire hatchery production cycle